STUDENT TEACHERS' EXPLICIT AND IMPLICIT PERCEPTIONS
OF ATTENTION DEFICIT HYPERACTIVITY DISORDER

by

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ABSTRACT

Student Teachers' Explicit and Implicit Perceptions of
Attention-Deficit/Hyperactivity Disorder

by

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This study examined student teachers’ explicit and implicit perceptions of ADHD and the relationship between perceptions of ADHD and social desirability. In addition, the relationship between a current measure of implicit perceptions of ADHD and one that was adapted for this study was also investigated. Findings indicate that student teachers view a student portrayed as exhibiting symptoms consistent with ADHD more negatively than a “normal” child in terms of their self-reported first impressions of the child as well as their predictions for the child’s future success. Participants’ perceptions, as measured by two implicit measures, however, were mixed, with results from one measure indicative of neutral attitudes toward ADHD, while results from another measure were suggestive of an implicit attitude bias against ADHD behaviors. Overall, social desirability did not appear to be meaningfully associated with student teachers’ implicit or explicit perceptions of ADHD. The key findings seem to indicate that student teachers
generally exhibit more negative perceptions of stereotypical ADHD behaviors than “normal” behaviors. Two measures of student teachers’ implicit perceptions of ADHD were not significantly related.
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CHAPTER I
INTRODUCTION

Attention-deficit/hyperactivity disorder (ADHD) is an increasingly recognized developmental disorder that is characterized primarily by attention deficits, impulsivity, and hyperactivity. This condition is particularly well known among teachers who have experienced the disruptive behaviors of students diagnosed with ADHD. Some of the behaviors that children with ADHD exhibit in the classroom include difficulty attending to and completing tasks, restlessness and out-of-seat behavior, impulsivity (e.g., talking out, interrupting), noncompliance, aggression, and peer relationship problems. Given the problems exhibited by children with ADHD in the classroom setting, it is likely that teachers' perceptions of children with ADHD are more negative than their perceptions of "normal," less disruptive students.

Indeed, there is evidence to support this view. Cornett-Ruiz and Hendricks (1993) found that behaviors characteristic of ADHD (e.g., off-task behavior) had a significant negative impact on elementary teachers' first impressions of children and predictions about their long-term success. Similarly, approximately half of the high school teachers in another study expected children with ADHD to experience multiple family-related difficulties later on in life (Brook, Watemberg, & Geva, 2000). Additional findings of this study suggest that teachers perceive ADHD behaviors as being so difficult to tolerate that they would prefer these students be somewhere other than their classroom. Specifically, 43% of the teachers in this study believed that children who have been diagnosed with ADHD should attend special schools, and 24% indicated that they would ask these students to leave the classroom if they disrupted the class activity.
Finally, Bibou-Nakou, Kiosseoglou, and Stogiannidou (2000) found that teachers viewed disobedience and off-task behavior as troublesome and, moreover, believed the causes of these behaviors to be internal pupil-related, or dispositional.

If such negative perceptions of behaviors associated with ADHD are translated into negative views of specific children, these views might be reflected in teachers' behaviors and actions toward such children in the classroom. Children could interpret teachers' behaviors as expectations for their own behavior and school performance, internalize these expectations, and begin to behave consistently with them. Thus, there is considerable potential for teachers' negative perceptions and behaviors to lead to self-fulfilling prophecies for children with ADHD. Indeed, a large body of teacher expectancy research supports the processes by which teacher expectations are conveyed to students, subsequently having a negative impact on the students' behavior and/or academic performance (Brophy & Good, 1974; Cooper, 1979; Cooper & Good, 1983; Rosenthal, 1974). Children whose teachers expect them to do well in school have been shown to make more intellectual gains than children for whom teachers do not hold such positive expectancies. Moreover, even when children who are not expected to make intellectual gains do show such gains, their teachers view them as less well-adjusted, less interesting, and less affectionate than those children who have been expected to exhibit intellectual growth (Rosenthal & Jacobson, 1968).

To date, researchers examining teacher expectations have utilized primarily (with the exception of one study) explicit measures (e.g., self-report) of teachers' perceptions toward children with behavior problems, making social desirability or political correctness a potential confound. Thus, it seems feasible that even though
teachers may be willing to admit, to some extent, negative perceptions of children, their implicit, or unconscious attitudes may be even more negative than those of which they are consciously aware. Given the current literature indicating that teachers’ explicit perceptions of ADHD are quite negative, combined with the potential for individuals to minimize negativity via self-report, it is likely that researchers thus far have gained only a partial understanding of how teachers perceive ADHD. It is important to assess whether teachers automatically perceive ADHD negatively, regardless of their explicitly reported perceptions, as such perceptions are likely to be transmitted in their interactions with students and may result in children’s development of negative self-fulfilling prophecies.

The purpose of this research study was to evaluate student teachers’ implicit and explicit perceptions of ADHD and the relationship between these perceptions and social desirability. It is important to note that although there may be some differences between the definitions of “perceptions” and “attitudes,” for the purpose of this study these terms are intended to mean a very general evaluation that people hold of others, objects, or issues (i.e., ADHD). As such, they will be used interchangeably throughout this manuscript. The three questions that are addressed in this study are:

1a. Do student teachers possess negative explicit and implicit perceptions of ADHD?

1b. What is the relationship between explicit and implicit perceptions of ADHD?

2. What is the relationship between student teachers’ implicit and explicit perceptions and social desirability?
3. What is the relationship between student teachers' perceptions as measured by a newly developed implicit measure, the Test of Knowledge About ADHD (KADD; Hepperlen, Clay, Henly, & Barke, 2002), and an adapted version of the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998), a computerized task that assesses implicit perceptions as measured by associative strengths between concepts and positively or negatively valenced attributes?

The results of the investigation will provide more information on implicit perceptions of ADHD and the relationship to explicit perceptions and social desirability. This will allow us to gain a better understanding of teachers' perceptions. This information may then be helpful in developing educational materials for teachers to help increase awareness of negative implicit perceptions and replace behaviors that communicate negative expectancies with those that convey more positive expectancies.
CHAPTER II

REVIEW OF LITERATURE

Introduction

In order to appreciate the research questions that will be investigated, it is necessary to first have a general understanding of ADHD and the problematic behaviors typically exhibited in the classroom by children who have the disorder. Thus, a brief overview of these behaviors will be provided. A review of expectancy effects in relation to the self-fulfilling prophecy will then be presented. Next, issues regarding potential biases in direct attitude measurement and the need for development of alternative measurements will be reviewed. Finally, in order to understand the hypotheses, it will be valuable to review the available research regarding implicit and explicit cognitive processes. Therefore, a description of these processes in relation to attitudes/perceptions will be provided.

ADHD in the Classroom

ADHD is a chronic disorder that begins in childhood and affects a child’s cognitive, social, and school functioning. It is characterized primarily by increased motor activity, impulsivity, and inattention. Prevalence estimates of ADHD in school-aged children range from 3-5% (American Psychiatric Association [APA], 1994). According to the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV; APA, 1994), at least six of nine symptoms must be present in the categories of inattention and/or hyperactivity-impulsivity for an individual to receive a diagnosis of ADHD.
ADHD is subdivided into three types—predominantly inattentive type (e.g., forgetful, easily distracted, loses things), predominantly hyperactive-impulsive type (e.g., talks excessively, interrupts others fidgets, or squirms), and combined type (displays both inattentive and hyperactive-impulsive symptoms). Symptoms must cause significant impairment for the individual in two settings (e.g., home and school) and must persist for at least 6 months.

Although the symptom presentation varies among children with the disorder, the behaviors that children with ADHD typically exhibit in the classroom include leaving their seats, making careless mistakes in or failing to finish school work, losing school materials (e.g., books, pencils, assignments), blurt out answers to questions, interrupting others, and fidgeting or squirming in their seats. Children with ADHD often have difficulty with organization, sustaining attention, delaying gratification, remaining engaged in school work, awaiting their turns, and following through on instructions. Some children who have the disorder will also talk excessively, run about the classroom, switch activities frequently, and have difficulty playing or working quietly.

ADHD has been associated with other school-related problems, such as poor peer relations and academic underachievement (Schroeder & Gordon, 2002). Social difficulties experienced by children with ADHD may vary according to particular subtypes, but can include aggressive behaviors, emotional regulation problems, social deficits, and social passivity. Children with ADHD often display school performance problems, with up to 25% exhibiting specific learning disabilities (Frick, Kamphaus, Lahey, & Loeber, 1991). In addition, Barkley (1997) noted that, as a group, children
with ADHD score slightly lower on intelligence tests than do children who do not have ADHD.

In summary, children who have ADHD tend to exhibit more academic, social, and behavioral problems than "normal" children. These difficulties are often highly visible in the classroom, and thus, are likely to be viewed as problematic and/or disruptive to the learning environment.

Expectancy Effects and Self-Fulfilling Prophecy

The concept of the "self-fulfilling prophecy" was introduced by Robert K. Merton in 1948 when he suggested that "a false definition of the situation... evoke[s] a new behavior which makes the originally false conception come true" (Merton, 1948, p. 195). In their classic Pygmalion study, Rosenthal and Jacobson (1966) expanded this idea to the classroom when they led teachers to believe that some of their students would "bloom" academically during the school year. Teachers were falsely informed that a randomly selected group of students were "intellectual bloomers," as indicated by their high scores on the fictitiously named "Harvard Test of Inflected Acquisition," a nonverbal test of intelligence that was purported to predict intellectual gains. Teachers were told that these particular children would demonstrate surprising gains in intelligence during the subsequent 8 months of school. Findings of this study indicated that the target students did indeed exhibit higher intelligence than the control group (i.e., those not identified as "bloomers") at the end of the year, which, according to the researchers, was evidence that teacher expectancies affect student performance. The induction of teacher expectancies also affected teachers’ descriptions of the students’ classroom behavior. At
the conclusion of the study, teachers described the target group of students as being more interesting, curious, and happy, as well as more likely to succeed in the future than students in the control group. Teachers also viewed these children as more appealing, adjusted, affectionate, and less in need of social approval than the children who were not expected to make intellectual gains, despite the fact that many children in the control group also exhibited intellectual growth (Rosenthal & Jacobson).

The Pygmalion experiment elicited very strong reactions, many of which involved criticisms of the methodology employed in the study. One of the criticisms was that the researchers utilized group tests of intelligence, rather than individual tests, and thus, critics argued, teacher expectancy effects might be a result of the greater unreliability of the measure. However, as Rosenthal (2002) has indicated, problems with reliability of the test instrument would make it more difficult, not easier, to obtain statistically significant results. Thus, this criticism is unsupported. Another source of controversy related to Pygmalion and similar studies that followed involves the magnitude of expectancy effects. Critics of expectancy effects argue that some attempts to replicate findings have failed, and in those studies that did find expectancy effects, such effects are very small (Jussim, 1991; Jussim & Eccles, 1995). However, a meta-analysis of the literature that included 345 studies and divided the research on expectancy effects into eight categories (reaction time, ink-blot tests, animal learning, laboratory interviews, psychophysical judgments, learning and ability, person perception, and everyday situations) supported both the statistical significance (median $Z = 6.62$) and practical importance (mean $d = .70$) of expectancy effects (Rosenthal & Rubin, 1978). Additional meta-analyses have yielded overall effect sizes of expectancy effects ranging
from $r = .10$ to $r = .30$ (Jussim, Smith, Madon, & Palumbo, 1998). Thus, although the Pygmalion and other related studies have endured a great deal of criticism (Elashoff & Snow, 1971; Fleming & Anttonen, 1971; Rowe, 1995; Wineburg, 1987), there appears to be sufficient support for the presence of teacher expectancy effects.

Still, others take the perspective that teachers' expectations generally predict students' performance not because they create a self-fulfilling prophecy, but because they are accurate (Brophy, 1983; Jussim, 1989; Jussim & Eccles, 1992; Meyer, 1985). In this view, teacher expectations are "reflective of or responsive to student incoming achievement differences" (Weinstein, 1998, p. 84). Jussim attempted to elucidate differences among three sources of expectancy confirmation (self-fulfilling prophecies, perceptual biases, and accuracy) by examining students and teachers in sixth grade math classes. At the beginning of the school year, teachers evaluated their students' talent, effort, and performance in math. Students' self-concept of ability in math, their effort in math, and their time spent on homework were also assessed. Students' prior math achievement was measured by their final grades in fifth grade math and the math composite on a standardized test. Correlations of teachers' expectations with student achievement scores were calculated after the effects of students' previous achievement and motivation were removed. Because the associations were reduced substantially after controlling for factors that predict teacher expectations and students' future achievement (e.g., the correlation between teacher perceptions of talent and grades was reduced from .57 to .12), Jussim believed that he had found support for accuracy, rather than biases, in teacher expectations.
Although there is some evidence against teacher expectancies leading to self-fulfilling prophecies, there is substantial support for the existence of such effects. Thus, it is important to conduct additional research in this area to better understand teachers' expectations of children, including those with academic and/or behavior problems, such as ADHD, as these could likely lead to self-fulfilling prophecies.

Communication of Teacher Expectancy Effects

The process, or the mechanisms through which expectations produce self-fulfilling prophecy effects, has important implications for the design of interventions aimed at targeting negative expectancies. The first step in the process involves the development of expectations. Teachers' expectations can be based on a myriad of factors, including the target student's gender, race, attractiveness, body build, socioeconomic status, and even his or her name (Tauber, 1997). After an expectation is developed, teachers convey their expectations, in both their verbal (e.g., praise, criticism) and nonverbal behavior (e.g., smiling), toward the student.

A number of studies have investigated how expectations that teachers naturally develop affect students' achievement. In this line of research, there is no attempt to manipulate expectancies. Research indicates that teachers provide differential treatment to students based on students' level of achievement and their perceived capability to learn (e.g., high-expectancy vs. low-expectancy students; Kuklinski & Weinstein, 2000). Differential treatment of students has been noted in various forms within the classroom. Such differences have been found in teacher-student interactions, the educational opportunities students are afforded, and classroom "climate," or the extent to which
teachers provide a warm and supportive environment for their students (Babad, 1993; Brophy, 1983; Brophy & Good, 1974; Cooper & Good, 1983; Mitman & Lash 1988; Rosenthal, 1973; Weinstein & Middlestadt, 1979). For instance, studies have shown that teachers provide less challenging and less intellectually stimulating work to low achievers than high achievers (Ferguson, 1998; Good & Nichols, 2001; Oakes, 1985). Teachers have also been shown to call upon high-achieving students to respond to questions more than their low-achieving peers (Cooper, 1979). While it is possible that teachers’ differential treatment may be attributable to differences in students’ levels of ability, Cooper argued that such differential treatment could instead be attributed to teachers’ perceptions that high-achieving students’ behaviors are more controllable and predictable. Thus, teachers treat high-achieving students differently (e.g., they call upon them more) because they are less likely than low-achieving students to engage in problem behaviors when called upon.

In a meta-analysis, Harris and Rosenthal (1985) identified the four-factor theory of mediation, which outlined certain teacher behaviors that are involved in the mediation of teacher expectancies. The factors include: (a) climate--teachers’ affective behaviors (e.g., smiling) toward students, (b) feedback--teachers’ positive reinforcement and punishment or criticism of students, (c) input--quantity and quality of teaching behaviors directed toward particular students, and (d) output--teachers’ provision of opportunities for students to respond (e.g., calling on students; Harris & Rosenthal).

According to Jussim, Palumbo, Chatman, Madon, and Smith (2000), one critical component in teacher expectations with regard to self-fulfilling prophecy effects is that of teacher affect. Specifically, teachers may like high-expectancy students, who are
categorized as such due to their achievement performance or some personal characteristic (e.g., appearance), and exert more effort toward teaching them than their low-expectancy peers, who do not exhibit such characteristics. Harris and Rosenthal (1985) provided evidence to support this view, as their meta-analysis of teacher expectancy studies indicated that classroom "climate" (i.e., warmth in teachers attitudes, statements, or behaviors) was the biggest mediating factor of self-fulfilling prophecies in the classroom.

In their analyses, Harris and Rosenthal (1985) noted that the magnitudes of the effects for the "climate," "input," and "output" factors were especially significant in the transmission of expectancies. Thus, Rosenthal (1989) postulated the affect-effort theory, which suggests that teachers put more effort into teaching the well-liked, high-expectancy students, than their less-liked, low-expectancy peers.

Research indicates that children, as early as first grade, are adept at recognizing even subtle differences in treatment toward high- and low-achieving students (Babad, 1993; Brophy, 1983; Brophy & Good, 1974; Cooper & Good, 1985, Marshall & Weinstein, 1984; Mitman & Lash, 1988; Weinstein, Marshall, Sharp, & Botkin, 1987; Weinstein & Middlestadt, 1979). In a series of studies, Weinstein and colleagues asked children to report on their teachers' behaviors toward hypothetical students identified as high-expectancy (e.g., "John always gets the best grades in the class...and is a very smart boy.") and low-expectancy students (e.g., "Mark usually gets the lowest grades...and is not a very smart boy."). Results indicated that children perceived low achievers as receiving more teacher direction, more negative feedback, greater teacher concern and vigilance, and fewer chances for responding than high achievers (Marshall & Weinstein; Weinstein, Marshall, Sharp et al.; Weinstein, Marshall, Brattesani, & Middlestadt, 1982;
Weinstein & Middlestadt). Babad (1990) found that children perceived low achievers to be the recipients of more learning support (e.g., teacher approaches student to help) and less pressure than high achievers, while high achievers were offered more emotional support (e.g., praise) than low achievers. In another study, children who were offered unsolicited teacher help were perceived by their peers to be less smart and less likely to succeed in the future (Graham & Barker, 1990). Thus, the provision of learning support may communicate low-ability cues, leading children who are the recipients of such support to believe that they are less smart than those children who do not receive unsolicited learning support. Therefore, there is potential for children to develop self-fulfilling prophecies, such that they achieve at a level commensurate with the expectancies conveyed to them through their teachers’ behaviors.

In addition to the effects that expectancies can have on children’s school performance, they may also influence children’s self-evaluations and perceptions of their abilities. There is evidence in a college sample that expectancies can influence self-evaluations (Fazio, Effrein, & Falender, 1981). In this study, undergraduate students participated in an interaction with the experimenter, which was designed to produce introverted or extraverted behavior in the participant. After the induction, participants completed self-description measures and interacted again with a confederate, and on both measures (self-descriptions and coded interactions), evidenced that they had internalized the dispositions projected upon them. In a study that investigated the role of parents’ expectancies for their children in gender role stereotypic activities (e.g., math and sports), gender-differentiated expectancies (e.g., sons were expected to be more competent in sports than daughters) influenced both the children’s perceptions of themselves and their
choices of activities (Eccles, Jacobs, & Harold, 1990). Thus, given the myriad of potential negative effects that negative expectancies can have on children’s academic performance and self-perceptions, it is necessary to conduct additional research in this domain to examine more specifically teachers’ perceptions of common disorders seen in the classroom, such as ADHD.

Peer Expectancy Effects

There is evidence to suggest that expectancy effects also operate among children. In a recent study, children were asked to complete two activities, one individually and another with a partner. After completing the first task, children were paired with a peer and told either that their partner was “one of the smartest kids in the class” and should do well at the task or “doesn’t do very well” and may not do well at the task (McAninch, Milich, & Harris, 2001, p. 150). Children who were led to believe that their partner was “smart” reported that their partners were smarter and that they worked together better than children in the “not smart” condition (McAninch et al.). Target children who were perceived by their peers to be “not smart” deferred more (e.g., agreed more) than those in the “smart” condition to their partners.

Rabiner and Coie (1989) conducted an indirect assessment of the relationship between rejected children’s interpersonal expectations and peer acceptance. Using sociometric measures, the researchers identified unfamiliar average, popular, and rejected children and asked them to interact in small groups on two different occasions. Children identified as average were assigned to be “hosts” and those identified as popular and rejected were randomly assigned to either the experimental (i.e., will receive a positive
expectancy induction) or control condition (i.e., will receive no information) as entry participants. After the initial interaction, the popular and rejected children were either told that they were liked by their peers or given no information. They were then reintroduced and asked to again play with their host peers. Host children interacted with participants from both conditions. Participants’ prosocial behaviors and verbalizations during the interactions were coded, and the host children were asked, “Who do you think most kids would rather have in this kind of group?” and “Who would you rather be friends with?” Results indicated that although the hosts’ preferences were equally divided among the experimental (i.e., those who where told they were liked) and control subjects (i.e., those told nothing), the rejected children who received the expectancy induction were better liked by their host peers than rejected children who did not receive the induction. Thus, their expectations about social interactions may have led them to behave in a manner consistent with their beliefs.

Peer expectancy effects were also found among the peers of children with ADHD. Unacquainted boys of the same age or grade were asked to play for 10 minutes and participate in a structured, competitive task. All perceivers (i.e., children that received information about their partner) were “normal,” while the target children (i.e., targets of the expectancies) included both boys diagnosed with ADHD and those not diagnosed with ADHD. Some perceivers were told that their partners were in a special class for their problem behaviors (“disrupting the class, talking when he shouldn’t, not sitting in his chair, and acting silly”; Harris, Milich, Corbitt, Hoover, & Brady, 1992, p. 43). Others were told only their partner’s name and grade. During the interactions, children who received the expectancy manipulation were found to exhibit less
friendliness and warmth toward, and generally interacted less with children with and without ADHD (Harris et al.). Target children identified as having behavior problems, regardless of their actual behavioral status (ADHD or non-ADHD), endorsed on self-report measures that they enjoyed the interaction less, rated their dyad as performing less well, took less credit for good performance, and rated their partners as being meaner than those in the control group. Finally, status effects (i.e., the impact of actual status on the interaction) indicated that, regardless of the condition that they were assigned to, the children with ADHD enjoyed their interactions better and were rated by observers (who were blind to the conditions of the participants) as acting friendlier than normal children; however, they were still more rejected by their partners than the children without ADHD.

Explicit Versus Implicit Attitudes/Perceptions

Recent research regarding the way in which people process social information suggests that such processing does not occur solely in an explicit (or conscious and controlled) manner. Rather, individuals also possess implicit, or automatic and unconscious, mechanisms through which they observe and process information (Bargh, Chaiken, Govender, & Pratto, 1992; Greenwald & Banaji, 1995; Wilson, Lindsey, & Schooler, 2000). This is true of perceptions and attitudes toward individuals and objects in the environment. Researchers have suggested that our underlying attitudes, rather than those we present publicly, represent our “default” basis for responding to environmental cues and are activated automatically, or without conscious effort (Neely, 1977; Shiffrin & Dumais, 1981). The literature regarding prejudice and stereotyping indicates that even some people who report that they possess nonprejudiced values have been shown to have
implicit biases that are inconsistent with their explicit, consciously reported attitudes (Devine, 2001).

There is evidence to suggest that our automatic processes are more likely than controlled processes to govern behavior under conditions in which our cognitive capacities are diminished (i.e., cognitive load; Neely, 1977). Cognitive load theory suggests that individuals are able to process only a limited amount of cognitive resources at a time. When attentional and cognitive resources are depleted, people's automatic, unconscious processes begin to take over. Thus, if teachers' automatically perceive ADHD behaviors, and perhaps specific children, as negative, they will be more likely to do so under conditions that require sustained mental effort. Teaching, itself, is an activity that likely requires sustained mental effort, particularly for novice teachers who have had little experience in the classroom. Moreover, teachers who have students with behavior problems in their classrooms may be utilizing more of their attentional and cognitive resources during teaching activities because they may have to implement behavioral management strategies more frequently than teachers who do not have these students in their classrooms.

Early research on social information processing and the development of stereotypes indicated that people assign categories to environmental stimuli as a way to make future processing more efficient (Allport, 1954; Lippmann, 1922). Thus, categorization of people is a very natural and universal process. Unfortunately, it is a process that often leads to biased and prejudiced attitudes toward certain groups of people (Sherman, 2001). As Allport stated, "Once formed, categories are the basis for normal prejudgment. We cannot possibly avoid this process" (Allport, p. 19). According
to some researchers, once an object is assigned to a category, it is very difficult to remove it from that category. Thus, once a person has developed biased or prejudiced attitudes, those attitudes may be difficult to change. However, more recently, researchers have provided evidence that automatic attitudes may be more malleable than was once thought (Blair & Banaji, 1996; Dasgupta & Greenwald, 2001; Macrae, Bodenhausen, Milne, Thorn, & Castelli, 1997). In a recent study, Dasgupta and Greenwald demonstrated that automatic negative attitudes toward Black Americans and elderly people could be reduced, at least temporarily, by exposing people to pictures of admired exemplars (e.g., Martin Luther King) of these stigmatized groups of people. Pre- and postadministrations of the IAT (Greenwald et al., 1998), a computerized measure that assesses associative strengths between attitude objects and positively or negatively valenced words, revealed that exposure to admired exemplars did indeed reduce implicit negative attitudes, both immediately and 24 hours after exemplar exposure.

Indirect Measurement of Teachers’ Expectations

As previously noted, teachers’ attitudes and expectancies are typically measured via a self-report method. This method usually involves the completion of questionnaires, which require teachers to respond to questions regarding students’ future potential or likelihood of success in various contexts (e.g., school, career). Unfortunately, however, these measures are highly subject to response biases (e.g., social desirability). Paulhus (1984) purported that response biases can involve both (a) self-deceptive enhancement, in which respondents exhibit an honest, but overly positive self-presentation style; and (b) impression management, in which individuals make a conscious effort to impress or
"fake good." While impression management is highly influenced by situational demands, self-deceptive enhancement is more resistant to change (Paulhus). Depending on the situational demands, teachers may either be unwilling to endorse negative attitudes toward ADHD on a questionnaire due to their desire to appear unbiased and "politically correct," or unconsciously present themselves in a more positive light. It is important to investigate the role of social desirability in relation to teachers' perceptions of ADHD to facilitate means of accurately measuring perceptions of ADHD as the first step toward minimizing the impact of negative biases on children in the classroom. It is also important to use measures that are more resistant to response bias and social desirability effects. The use of implicit measures would circumvent that problem.

As a result of the potential difficulties associated with self-report methods, Hepperlen and colleagues (2002) developed the KADD, which is an indirect measure of teachers' category-based attitudes and expectancies (i.e., "expectations toward broad categories of people") toward children with ADHD. The instrument was designed according to Hammond's (1948) "error-choice" technique, which is based on the hypothesis that individual's attitudes influence the cognitive tactics that they employ when guessing on difficult problems. Presented as an information test, the KADD is actually a multiple-choice questionnaire on which respondents are asked to choose from four incorrect responses that are approximately "equidistant from the correct answer, and that represent varying degrees of favorableness or unfavorableness toward the attitude object" (i.e., children with ADHD; Hepperlen et al., p. 135). The questionnaire incorporates both error-choice and general knowledge items in order to disguise the true purpose of the test. Positive scores on the measure are purported to represent a favorable
attitude toward students with ADHD, and negative scores are indicative of an unfavorable attitude. Hepperlen and colleagues' initial analysis of the KADD's psychometric properties indicate that it has adequate to good internal consistency reliability (Cronbach's alpha = 0.82). A particularly important finding is that there was no significant association, \( r (103) = 0.07, p > .05 \), between the KADD and a direct attitude measure, indicated by the teacher's rating of the "likelihood of ADHD students to be successful in higher education." Thus, it appears that this instrument does indeed measure a variable that is distinct from that obtained via self-report. However, further research is necessary to determine whether this instrument is psychometrically sound, how it is related to explicit self-report measures, and whether it is valid for measuring teachers' expectations.

While the development of the KADD is an important step toward gaining a better understanding of teachers' attitudes and expectations toward students with ADHD, it is only a beginning. In order to broaden the research base regarding teachers' implicit expectations toward children with ADHD, it is necessary to investigate other indirect methods of attitude measurement.

Another instrument that has been used to measure implicit perceptions, though not specifically in relation to ADHD, is the IAT (Greenwald et al., 1998), a computerized task that assesses implicit perceptions as measured by associative strengths between concepts and attributes. The theory behind the IAT is that individuals should be able to map two concepts onto a single response more easily if the concepts are compatible, or associated in memory, than if they are incompatible, or not associated in memory. It has gained considerable attention in the last decade, and hundreds of studies have used the
IAT to investigate implicit perceptions and automatic biases against the elderly, racial groups, political preferences, and even one’s self. The IAT, like the KADD, is purported to be less susceptible to social desirability effects, and therefore, could potentially be a purer measure of one’s automatic attitudes. The IAT could help expand our understanding of people’s attitudes, particularly those that are outside of conscious awareness. It may also be useful to help individuals become more aware of their own negative attitudes, which could lead them to make positive changes in their behavior toward others.

Conclusion

Despite the continued controversy regarding expectancy effects and the self-fulfilling prophecy, there is considerable evidence that teacher expectancies can indeed have deleterious effects on students’ academic behavior and performance. Given the disruptive nature of the behaviors that children with ADHD exhibit, it is plausible that teachers will perceive these behaviors, and quite possibly the children, in a negative light. However, the few investigations that have been conducted regarding teachers’ perceptions toward children with ADHD are likely to have been tainted with social desirability effects, thereby causing perceptions to appear more positive than they actually are. Thus, it is important to investigate the manner in which teachers’ implicitly perceive children with ADHD.

Purpose and Objectives

The purpose of this study is to obtain information regarding student teachers’
explicit and implicit perceptions of ADHD. The research on teachers’ perceptions is overwhelmingly based on direct measures, or self-reports. Due to the potential for respondent biases on these types of measures (e.g., social desirability), they tap only those perceptions that respondents are willing to admit to possessing. Thus, it is important to examine teachers’ unconscious perceptions, which, in the classroom setting, are likely to override those that are conscious, and perhaps more politically correct.

This study has three major objectives. The first objective is to obtain information regarding student teachers’ explicit and implicit perceptions toward ADHD, including the extent to which they are related. Specifically, the research questions that will be addressed are:

1a. Do student teachers possess negative explicit and implicit perceptions of ADHD?

1b. What is the relationship between student teachers’ explicit and implicit perceptions of ADHD? Based on previous research findings that are consistent with teachers possessing unfavorable attitudes toward behaviors characteristic of ADHD, it is hypothesized that teachers’ unconscious, or implicit perceptions, of ADHD behaviors will be more negative than positive. It is also hypothesized that an indirect measure will yield perceptions that are only moderately related to those reported on a direct measure due to the potential confound of social desirability in self-report measures.

The second objective is to examine the relationship between social desirability and explicit and implicit perceptions of ADHD. Thus the question that will be examined is:
2. What is the relationship between teachers' implicit and explicit perceptions and social desirability? It is hypothesized that social desirability will be associated with more positive perceptions of ADHD.

The third objective is to examine the relationship between the KADD, a newly developed questionnaire designed to assess teachers' implicit perceptions of ADHD, and an adapted version of the IAT, a computerized task that assesses implicit perceptions as measured by associative strengths between concepts and attributes. The research question that will be investigated is:

3. What is the relationship between teachers' perceptions of ADHD as measured by the KADD and the ADHD-adapted IAT?
CHAPTER III

METHODS

Participants

The participants for this study were 38 preservice teachers who were recruited from the elementary education programs at two universities in Pennsylvania. Preservice teachers were selected over teachers currently in the workforce, as it was theorized that they would have less or no experience teaching children with ADHD and would be less likely to have preconceived perceptions or attitudes toward this population. Therefore, there would be fewer confounds to consider when interpreting the results than if the sample consisted of in-service teachers. Additionally, because educational training related to ADHD would be mostly geared toward teachers currently in training, the use of preservice teachers would lead to better implications for training in this area.

Respondents were 33 females (86.8%) and 5 males (13.2%), who ranged in age from 20 to 22 years old \((M = 21.2, SD = 0.44)\). The majority of the respondents were Caucasian \((n = 36, 94.7\%)\). All respondents were completing undergraduate degrees, with the majority majoring in elementary/early childhood education \((n = 37, 97.4\%)\). Only one respondent reported having ever been employed as a teacher, and none of the respondents reported having an educator license in the state of Pennsylvania. Nearly two thirds \((n = 24, 63.2\%)\) of the sample indicated that they had student taught in a classroom.

Of the total sample, 76.3\% \((n = 29)\) reported knowing or having worked with a child diagnosed with ADHD. Of those who reported knowing a child with ADHD,
58.6% \((n = 17)\) indicated that they had a student with ADHD in their classroom during their student teaching experience, 17.2% \((n = 5)\) had one or more friends with ADHD, and 3.4% \((n = 1)\) had a relative with ADHD. The most frequent “other” responses for this item included that the students with ADHD had attended a summer camp \((n = 8)\) or a daycare/babysitting program \((n = 4)\) where the respondent worked or volunteered.

Respondents were also asked to indicate the number of children with ADHD they knew. Six respondents provided a range rather than an exact number for this question. Ten of the 29 respondents who reported knowing or having worked with a child with ADHD indicated that they knew only one child, while only two knew as many as 15 children with an ADHD diagnosis. One respondent who reported knowing a child with ADHD did not report how many children he/she knew.

More than two thirds of the respondents \((n = 26; 68.4\%)\) had attended a class in which one portion was devoted to ADHD, and over half \((n = 20; 52.6\%)\) reported having read about ADHD independently. Respondents’ complete demographic information appears in Table 1.

**Instruments**

**Direct Attitude Measure**

Because there is currently no validated instrument that specifically measures teachers’ attitudes toward ADHD behavior, one was adapted, with permission, from Cornett-Ruiz and Hendricks (1993) and served as the explicit, or direct, attitude measure. The first section of this measure is the First Impressions Rating Scale, which consisted of questions regarding how the student teachers viewed daily encounters with a hypothetical
Table 1

Demographic Characteristics of Preservice Teachers

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Total sample (N = 38)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Gender</td>
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</tr>
<tr>
<td>Male</td>
<td>5</td>
</tr>
<tr>
<td>Female</td>
<td>33</td>
</tr>
<tr>
<td>Ethnicity</td>
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</tr>
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<td>Caucasian</td>
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</tr>
<tr>
<td>Latino</td>
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</tr>
<tr>
<td>Other</td>
<td>1</td>
</tr>
<tr>
<td>Major(s)</td>
<td></td>
</tr>
<tr>
<td>Elementary/early childhood education only</td>
<td>32</td>
</tr>
<tr>
<td>Elementary/early childhood and secondary education</td>
<td>2</td>
</tr>
<tr>
<td>Elementary/early childhood and special education</td>
<td>1</td>
</tr>
<tr>
<td>Elementary/early childhood education and other</td>
<td>2</td>
</tr>
<tr>
<td>Special education only</td>
<td>1</td>
</tr>
<tr>
<td>Training</td>
<td></td>
</tr>
<tr>
<td>Attended a class in which one portion devoted to ADHD</td>
<td>26</td>
</tr>
<tr>
<td>Read about ADHD independently</td>
<td>20</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
</tr>
<tr>
<td>Number of children with ADHD known</td>
<td></td>
</tr>
<tr>
<td>Only one</td>
<td>10</td>
</tr>
<tr>
<td>Two to five</td>
<td>11</td>
</tr>
<tr>
<td>Six to ten</td>
<td>5</td>
</tr>
<tr>
<td>Fifteen to seventeen</td>
<td>2</td>
</tr>
</tbody>
</table>

child (e.g., how well this child would get along with peers, the likelihood that the child would complete tasks, the child’s disposition). The next section, the Prediction scale, addressed predictions about the child’s long-term success (e.g., the likelihood of the child going to college or being employed). See Appendixes C and D. Teachers were encouraged to provide honest responses and ratings. The items on the questionnaire were presented in a Likert-scale format (e.g., 1 = almost never to 5 = almost always) and were
worded accordingly. A composite score, or global index of direct attitude, was obtained for each respondent. Higher total scores on this measure indicate more negative attitudes than lower total scores. No information regarding the psychometric properties of either of these scales is available.

Implicit Association Test

The implicit measure of attitude consisted of a computer word-pairing task that was adapted from the Implicit Association Test (IAT; Greenwald et al., 1998) a computerized measure that assesses associative strengths between attitude objects and positively or negatively valenced words. The theory behind the IAT is that individuals should be able to map two concepts onto a single response more easily if the concepts are compatible, or associated in memory, than if they are incompatible, or not associated in memory. While this measure is typically used to assess implicit biased attitudes toward out-groups (e.g., minority individuals), the adapted version incorporated word stimuli that are associated with ADHD in order to make it relevant to the specific research questions that were proposed.

The procedures of the adapted IAT were modeled after Greenwald and Farnham’s (2000) self-esteem IAT, which measures automatic associations of self-relevant (e.g., “me,” “my”) and nonself-relevant words (e.g., “them,” “their”) with positively and negatively valenced words (e.g., rainbow vs. pain). Whereas the self is the attitude object in the self-esteem IAT, ADHD was the attitude object in the adapted version of the IAT. Thus, instead of self-relevant and nonself-relevant words, the adapted IAT utilized ADHD-relevant and non-ADHD-relevant words.
Participants were asked to view several words individually on the computer screen and classify them into the appropriate target concept ("ADHD" or "Not ADHD") or attribute ("pleasant" or "unpleasant") category using either the "d" or "k" key on the computer keyboard. The "ADHD" list consisted of the following words: off-task, disruptive, fidgety, inattentive, and noncompliant. These words were chosen to encompass both hyperactive-impulsive and inattentive symptoms that children with combined type ADHD exhibit. The "Not ADHD" list contained the following stimuli: on-task, calm, still, attentive, and compliant. The attribute words (i.e., pleasant and unpleasant words) were borrowed from previous IAT studies (e.g., Greenwald & Farnham, 2000). The positively valenced, or "pleasant," attribute words were: joy, flower, smile, laugh, and sweet. The negatively valenced, or "unpleasant," attribute words were: evil, anger, fight, poison, and vomit. Although most IATs have used five or six stimulus words or pictures, a recent study found that valid IAT measures can be produced using as few as two stimulus items to represent each concept (Nosek, Greenwald, & Banaji, 2005).

In each of the steps of the adapted IAT, participants were provided with a new set of instructions. For each task, response latency was measured and averaged. The first two steps of the IAT were learning stages to familiarize participants with the categorization tasks. In the first learning stage of the task, participants were asked to categorize 20 target words (each word considered a "trial") relevant or nonrelevant to the attitude object (i.e., ADHD), when presented separately, as either ADHD-related ("ADHD") or not ADHD-related ("Not ADHD). In the second stage, participants categorized a different set of 20 words (e.g., flower, vomit) as pleasant or unpleasant.
They did this by pressing specified keys on the computer keyboard as rapidly as possible. In steps three and four, which consisted of a 20-trial practice block and a 40-trial test block, respectively, participants endorsed which of the four categories a stimulus word belonged to, with two categories being presented on each side (e.g., “Not ADHD + pleasant” or “ADHD + unpleasant”). Participants practiced categorizing “ADHD” and “Not ADHD” words again in the fifth step, however, key assignments for the categories were reversed. Finally, steps six and seven were similar to steps three and four, but with reversed key assignments (e.g., “Not ADHD + unpleasant” on the left and “ADHD + pleasant” on the right). The procedures for the IAT are outlined in Table 2.

Consistent with the recently improved scoring algorithm for the original IAT, $D$ was calculated to obtain a measure of implicit attitude. $D$ is calculated by dividing the millisecond difference between the compatible (“ADHD + unpleasant” and “Not ADHD + pleasant”) and incompatible (“ADHD + pleasant” and “Not ADHD + unpleasant”) test blocks by the overall latency standard deviation from the two combined test blocks (Greenwald, Nosek, & Banaji, 2003). The $D$ effect is likened to the effect size measure, $d$ (Cohen, 1977), in that it is obtained by dividing a difference between means by a

Table 2

Sequence of Trial Blocks in the Adapted ADHD IAT

<table>
<thead>
<tr>
<th>Block</th>
<th># of trials</th>
<th>Task</th>
<th>Items assigned to left-key response (d)</th>
<th>Items assigned to right-key response (k)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>Practice</td>
<td>ADHD words</td>
<td>Not ADHD words</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>Practice</td>
<td>Pleasant words</td>
<td>Unpleasant words</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>Practice</td>
<td>Pleasant words + ADHD words</td>
<td>Unpleasant words + Not ADHD words</td>
</tr>
<tr>
<td>4</td>
<td>40</td>
<td>Test</td>
<td>Pleasant words + ADHD words</td>
<td>Unpleasant words + Not ADHD words</td>
</tr>
<tr>
<td>5</td>
<td>20</td>
<td>Practice</td>
<td>Not ADHD words</td>
<td>ADHD words</td>
</tr>
<tr>
<td>6</td>
<td>20</td>
<td>Practice</td>
<td>Pleasant words + Not ADHD words</td>
<td>Unpleasant words + ADHD words</td>
</tr>
<tr>
<td>7</td>
<td>40</td>
<td>Test</td>
<td>Pleasant words + Not ADHD words</td>
<td>Unpleasant words + ADHD words</td>
</tr>
</tbody>
</table>
standard deviation. It is different from $d$ in that while $d$ is computed from a pooled within-treatment standard deviation, the standard deviation in the denominator of $D$ is calculated from the scores in both conditions (Greenwald et al.). Higher scores are indicative of more attitude bias or negativity toward ADHD.

Investigations of the original IAT’s psychometric properties indicate that the IAT has adequate test-retest reliability across a 2-week time period ($r = .65-.69$; Bosson, Swann, & Pennebaker, 2000; Dasgupta & Greenwald, 2001) and convergent validity with other implicit attitude measures (e.g., a response-window evaluative priming task; Cunningham, Preacher, & Banaji, 2001). Although the IAT was adapted for this study, it is hypothesized that because attitudes regarding certain groups of people tend to be quite stable, reliability scores would be as high or higher as those found in the above studies.

Knowledge of ADHD Test

The newly developed KADD (Hepperlen et al., 2002) was administered as a supplement to the adapted IAT. It was presented under the guise that it is an information test to assess participants’ knowledge about ADHD; however, as discussed in the Review of Literature, it is actually an indirect measure of teachers’ attitudes and expectancies toward children with ADHD. As mentioned previously, it is a multiple-choice questionnaire on which respondents are asked to choose from four incorrect responses that are equidistant from the correct answer. Positive scores on the measure are purported to represent a favorable attitude toward students with ADHD, and negative scores are indicative of an unfavorable attitude. Preliminary analyses of the psychometric properties of the KADD have demonstrated that it is internally consistent,
with a coefficient alpha of 0.81 (Hepperlen et al.). No other studies that investigated the psychometric properties of the KADD were found.

Marlowe-Crowne Social Desirability Scale

Finally, the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960) was administered to assess the extent to which participants attempt to respond to questions in a socially desirable manner. This questionnaire consists of 33 items designed to measure respondents’ tendencies to present themselves in a biased, overly positive light (see Appendix E). Higher scores on this measure are indicative of more social desirability. The Marlowe-Crowne Social Desirability Scale (MC-SDS) has been shown to have an internal consistency coefficient of 0.88 and a test-retest correlation of 0.89 (Crowne & Marlowe). Positive correlations have been shown between the MC-SDS and the $K$ and $L$ scales of the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1951), which are thought to measure “defensiveness” and attempts to cast oneself in a favorable light. Reported correlations with the $K$, test-taking attitude, scale have ranged from $r = .40$ (Crowne & Marlowe) to $r = .43$ (Stone, 1965). The $L$, or Lie scale, has been shown to correlate more highly with the MC-SDS, with $rs$ in the range of .54 (Crowne & Marlowe) to .78 (Stone). These findings provide support for the convergent validity of the MC-SDS.

Procedures

Recruitment procedures were initiated through first identifying and contacting the directors of training of the elementary education departments at two universities, who
ultimately invited the principal investigator to attend meetings in which all eligible
students would be present. At these meetings, potential participants were informed of the
study and invited to participate. They were told that the purpose of the study was to
investigate student teachers’ beliefs about children in the classroom in order to learn
more about the relationships among children’s academic performance, children’s
classroom behaviors, and teachers’ beliefs about students. Although 80 students
indicated interest in participating in the study as evidenced by submitting their contact
information via a sign-up sheet, only 38 actually completed the study. Scheduling
difficulties, inability to contact students, and students ultimately deciding not to
participate when contacted were the primary factors contributing to the lower sample
size. Although participants completed the study in groups of 2 to 6 people at a time, the
order of the measures was counterbalanced across the participants in each group.
Participants provided verbal and written informed consent (see Appendix A) prior to
participating. They completed the demographic questionnaire (see Appendix B) and all
four measures at once. The order of the first three measures administered (the Direct
Attitude Measure, IAT, and KADD) were counterbalanced across teachers. These
measures are located in Appendixes C, D, and E, respectively. Participants always
completed the MC-SDS (see Appendix F) last. For the IAT, participants were seated at
the computer and asked to carefully read and follow the instructions for each task. They
were given an opportunity to ask questions about the task prior to beginning if they
needed further instruction or clarification. All of the participants appeared to have a
good understanding of the task, as requests for clarification were very infrequent. The
few participants who did ask for clarification prior to the task seemed to simply be
seeking reassurance that they had fully understood the instructions. The other three instruments were paper-and-pencil measures.

Prior to completing the Direct Attitude Measure (the explicit measure), participants watched two short video clips of different students (the order of which was counterbalanced), one of a child exhibiting various symptoms of combined type ADHD and one of a child who displays more “normal” behaviors. Male children were chosen to represent the students in the clips, as ADHD is significantly more prevalent in males than females. The child was portrayed as exhibiting both hyperactive-impulsive behaviors (e.g., fidgeting, getting out of seat) and inattentive symptoms (e.g., staring off, digging in his desk). Prior to viewing each clip, participants were asked to imagine that the child was a student in their classrooms and to complete the Direct Attitude Measure, which was referred to as a First Impressions questionnaire, as if they were the child’s teacher.

In order to make this synopsis more salient to the educational setting, the scene in the video clips took place in a classroom, where the child was said to be working on a homework assignment. No additional information was given regarding the students in the clips to avoid measuring biased attitudes toward the ADHD label versus bias toward the behavior. The “normal” child was seen working diligently at his desk, while the child with ADHD was seen engaging in off-task behaviors (e.g., playing with his pencil, daydreaming) and getting out of his seat. However, the children’s behaviors in the video clips were not particularly extreme, so as not to signal to the viewer that the child with ADHD is overly disruptive nor that the “normal” child is overly well behaved.
Participants also completed the KADD, which was presented to them as an information test that assesses their knowledge about ADHD. Finally, participants completed the MC-SDS.
CHAPTER IV
RESULTS

Preliminary Data Analyses

Because there is little information regarding the psychometric properties of the measures used in this study, internal consistencies were calculated for each of them. The First Impressions Scale of the direct attitude measure, when administered after participants viewed the videotaped scenario of the “normal child,” yielded a Cronbach alpha of .97. The same scale administered after participants viewed a clip of a child portrayed as exhibiting stereotypical ADHD behavior produced a Cronbach alpha of .91. When the items from the First Impressions Scales for the ADHD and “normal” child were combined, a reliability estimate of .92 was obtained. The alpha coefficients for the Predictions scale of the direct attitude measure were .91 for the “normal child” and .72 for the “ADHD child.” When the responses for the ADHD and “normal” child were combined, a Cronbach alpha of .83 was obtained. Overall, both the First Impressions and Predictions scales of the direct attitude measure have moderate-to-high internal consistency, which is adequate for research purposes. The MC-SDS yielded a reliability estimate of .70. Although this is lower than the reliability estimate of .88 reported by Crowne and Marlowe (1960), it is still adequate for research purposes. The 22 items of the KADD that form the KADD composite produced an alpha of .76, which is similar to the alpha of .81 reported by Hepperlen and colleagues (2002) in their initial study of the KADD. Consistent with the original analysis of the KADD, an internal consistency reliability estimate was not obtained for the knowledge items, as they were intended to
distract participants from the true purpose of the scale (Hepperlen et al.). Similar to Greenwald and colleagues (2003), a measure of internal consistency for the IAT was computed as the correlation between response latencies based on blocks 3 and 6 (practice blocks) and those based on blocks 4 and 7 (test blocks). A correlation coefficient of .764 was obtained, which is similar to the rs reported from four data sets by Greenwald and colleagues, which ranged from .512 - .767.

Explicit and Implicit Perceptions of ADHD

The first objective of this study was twofold: (a) to obtain preliminary information regarding student teachers’ explicit and implicit perceptions of ADHD, and (b) to determine if teachers’ implicit and explicit perceptions were related. The First Impressions and Predictions scales, which together form the Direct Attitude Measure, were administered to investigate student teachers’ explicit perceptions of ADHD. The KADD and IAT were used to measure teachers’ implicit perceptions.

For the Direct Attitude Measure, mean composite scores were calculated separately for the First Impressions and Predictions sections of the measure. Dependent t tests were conducted and standard mean difference effect sizes were calculated to compare participants’ first impressions and prediction of success for “normal” children and children displaying behaviors consistent with ADHD. Effect sizes were interpreted according to Cohen’s (1988) guidelines, in which effect sizes of .20 - .49 are considered small, .50 - .79 moderate, and .80 and above large. The possible ranges for composite scores on the First Impressions scales and Predictions scales were 20 - 100 and 7 - 35, respectively. On both scales, higher scores indicate more negative perceptions.
Dependent $t$ tests indicate that there were statistically significant differences between the mean scores for both the First Impressions, $t(37) = 8.252; p = .000$, and Predictions scales, $t(37) = 6.219; p = .000$, of the direct attitude measure based on the ADHD versus non-ADHD status of the child. On the First Impressions portion of the Direct Attitude Measure, teachers endorsed more negative first impressions of a child exhibiting ADHD behaviors than they did for a “normal” child ($ES = 1.95$). Specifically, student teachers viewed daily encounters (e.g., how well this child would get along with peers, the likelihood that the child would complete tasks, the child’s disposition) with a hypothetical child displaying symptoms consistent with ADHD more negatively than those with a “normal” child. Participants also predicted that the child displaying symptoms of ADHD would be less likely to achieve success in the future (e.g., go to college, become employed) than a “normal” child ($ES = 1.25$). These effect sizes are both large and indicate that there are considerable differences between participants’ impressions of children displaying symptoms of ADHD and those not displaying such symptoms. Means and standard deviations for this measure are presented in Table 3.

As a supplemental comparison of participants’ ratings of the ADHD and “normal” child, an average of all of the participants’ mean scores was calculated for the First Impressions and Predictions scales of the Direct Attitude Measure. A mean of 3.44 ($SD = .51$) was obtained for the child with ADHD, while the mean score for the “normal” child was 2.19 ($SD = .77$). Similar scores were obtained for the Predictions section, with a mean of 2.56 ($SD = .60$) for the child with ADHD and mean of 1.69 ($SD = .77$) for the “normal” child. The scale ranges from 1 to 5, with almost never and almost always serving as the end anchors. Some items are reverse-scored, so that higher scores are
Table 3

*Teachers’ Explicit and Implicit Perceptions of ADHD: Means and Standard Deviations*

<table>
<thead>
<tr>
<th>Instrument measure</th>
<th>M</th>
<th>SD</th>
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<tbody>
<tr>
<td>Direct Attitude Measure</td>
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<td></td>
</tr>
<tr>
<td>First Impressions - ADHD</td>
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<td>10.2</td>
</tr>
<tr>
<td>First Impressions - “Normal”</td>
<td>43.8</td>
<td>15.3</td>
</tr>
<tr>
<td>Predictions - ADHD</td>
<td>17.9</td>
<td>4.2</td>
</tr>
<tr>
<td>Predictions - “Normal”</td>
<td>11.8</td>
<td>5.4</td>
</tr>
<tr>
<td>KADD</td>
<td>2.8</td>
<td>11.8</td>
</tr>
<tr>
<td>IAT</td>
<td>0.88</td>
<td>0.33</td>
</tr>
</tbody>
</table>

*Note.* Higher scores on the Direct Attitude Measure are indicative of more negative perceptions.

indicative of more negative impressions. Although the mean scores generally fell within the middle range for both children, indicating that student teachers had fairly neutral attitudes toward both children, student teachers did endorse a higher likelihood for problems for students portrayed as exhibiting symptoms of ADHD.

Composite scores were also computed from the error-choice items of the KADD, which is considered to be an implicit measure of attitudes toward ADHD. Scores can range from -46 (highly negative) to +42 (highly positive). On this measure, participants reported neutral attitudes toward ADHD ($M = 2.8$, $SD = 11.8$), with individual composite scores ranging from -20 to +33. In the original study of the KADD, Hepperlen and colleagues (2002) reported a mean score of 7.17 ($SD = 12.73$), which they described as “slightly positive” attitudes.
The IAT was used as another measure of student teachers’ implicit attitudes toward students with ADHD. Consistent with the assertions of the authors of the improved scoring algorithm that the \( D \) scores obtained from the IAT are similar to effect sizes (Greenwald et al., 2003), the scores obtained in this study were treated as such. After omitting an outlying data point for one participant (-.785), a mean \( D \) score of .88 was obtained (\( SD = .33 \)), which, according to Cohen’s standards for effect sizes, is considered large. The large effect size obtained from the IAT indicates there are considerable differences between participants’ response latencies for the incompatible and compatible blocks of the IAT, suggesting that there is attitude bias toward ADHD-related stimuli.

To determine if explicit and implicit attitudes toward ADHD are related, correlations were calculated between the implicit measures and the First Impressions and Predictions sections of the Direct Attitude Measure for the child displaying ADHD behaviors. The Pearson \( r \)s and \( p \) values for these comparisons are presented in Table 4. The KADD and the First Impressions section of the explicit measure were inversely and significantly related, indicating that more positive attitudes toward ADHD on the KADD were associated with more positive first impressions of the child exhibiting ADHD behaviors. This correlation was moderate in strength. Scores on the Predictions portion of the explicit measure were not significantly associated with scores on the KADD. A statistically significant correlation of moderate magnitude was obtained between the IAT and the First Impressions section of the Direct Attitude Measure, indicating that more attitude bias toward ADHD is associated with more negative first impressions of ADHD behaviors. The IAT scores were not significantly correlated with scores on the
Table 4

Correlations of Student Teachers' Explicit and Implicit Perceptions of ADHD as Measured by the Direct Attitude Measure, IAT, and KADD

<table>
<thead>
<tr>
<th>Measures</th>
<th>r</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Attitude Measure with IAT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First impressions of ADHD student</td>
<td>.442</td>
<td>.006</td>
</tr>
<tr>
<td>Predictions of success for ADHD students</td>
<td>.233</td>
<td>.165</td>
</tr>
<tr>
<td>Direct Attitude Measure with KADD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First impressions of ADHD student</td>
<td>-.450</td>
<td>.005</td>
</tr>
<tr>
<td>Predictions of success for ADHD students</td>
<td>-.108</td>
<td>.521</td>
</tr>
</tbody>
</table>

Predictions section of the explicit measure. Overall, these results indicate that explicit attitudes as measured by the First Impressions section of the Direct Attitude Measure are moderately related to implicit attitudes, as measured by both the IAT and the KADD. However, explicit attitudes as measured by the Predictions section of the explicit measure were not significantly related to implicit attitudes.

The Relationship of Explicit and Implicit Perceptions to Social Desirability

The second objective of this study was to examine the role of social desirability in teachers' explicit and implicit perceptions of ADHD. The measures used to address this objective included both scales of the Direct Attitude Measure, the KADD, the IAT, and the MC-SDS.

Correlations were calculated between the MC-SDS and each of the other measures to investigate the relationship between student teachers' explicit and implicit
perceptions and social desirability. The Pearson $r_s$ and $p$ values for these comparisons are presented in Table 5. Overall, there were few meaningful correlations between social desirability and implicit or explicit measures of perceptions of ADHD. Both the First Impressions and Predictions scales of the direct attitude measure for the child portrayed as an ADHD student were inversely related to participants' scores on the MC-SDS, indicating that more negative ratings of the ADHD student were associated with less social desirability; however, the magnitude of these correlations was quite small. Scores on both the First Impressions and Predictions scales of the Direct Attitude Measure were positively correlated with scores on the MC-SDS for the “normal” child, indicating that as participants rated the “normal” child more negatively, social desirability scores increased. While the magnitude of the correlation between the Predictions and social desirability scales was very small, the First Impressions-social desirability correlation for the “normal” child was statistically significant and of a moderate magnitude.

Participants' IAT scores were inversely correlated with their scores on the MC-SDS, indicating that as bias against ADHD stimuli increases, participants make fewer attempts to present themselves in positive light. Although this correlation was small, it was in the expected direction.

The KADD scores were positively correlated with social desirability scores, indicating that as participants endorse more positive attitudes toward students with ADHD, as measured by the KADD, they exhibit more social desirability. This correlation was statistically significant and in the expected direction.
Table 5

Correlations of Student Teachers' Explicit and Implicit Perceptions of ADHD with Social Desirability as Measured by the Marlowe-Crowne Social Desirability Scale (MC-SDS)

<table>
<thead>
<tr>
<th>Measures compared with MC-SDS</th>
<th>r</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explicit measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Attitude Measure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Impressions of ADHD student</td>
<td>-.196</td>
<td>.239</td>
</tr>
<tr>
<td>Predictions of success for ADHD student</td>
<td>-.101</td>
<td>.546</td>
</tr>
<tr>
<td>First Impressions of “normal” student</td>
<td>.417</td>
<td>.01</td>
</tr>
<tr>
<td>Predictions of success for “normal” student</td>
<td>.175</td>
<td>.294</td>
</tr>
<tr>
<td><strong>Implicit measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAT</td>
<td>-.183</td>
<td>.277</td>
</tr>
<tr>
<td>KADD</td>
<td>.319</td>
<td>.051</td>
</tr>
</tbody>
</table>

Comparison of Implicit Perceptions as Measured by the IAT and the KADD

The third objective of the study was to examine the relationship between teachers’ perceptions as measured by the KADD and the ADHD-adapted IAT. A correlation was calculated between scores from the KADD and the IAT. A Pearson $r$ of -.322 ($p$ value = .052) was obtained, indicating that these measures are moderately correlated. Although a specific hypothesis was not made regarding the relationship of the KADD and adapted IAT, the correlation is in the expected direction, suggesting that bias on the IAT is associated with bias on the KADD. One would presume, however, that because they theoretically measure a similar construct, they would be more highly correlated.
The purpose of this study was to investigate student teachers’ perceptions of and attitudes toward ADHD, in general, and more specifically, to determine whether there are differences between their self-reported explicit perceptions, and their implicit, or less conscious perceptions of students who exhibit symptoms consistent with ADHD. Past research suggests that teachers tend to view children with ADHD more negatively than their “normal” peers (Bibou-Nakou et al., 2000; Brook et al., 2000; Cornett-Ruiz & Hendricks, 1993). If such negative perceptions of behaviors associated with ADHD are translated into negative views of specific children, these views might be reflected in teachers’ behaviors toward children in the classroom. If children then internalize these expectations, they may begin to behave consistently with them. Thus, there is considerable potential for teachers’ negative perceptions and behaviors to lead to self-fulfilling prophecies for children with ADHD. The vast majority of previous studies investigating teachers’ perceptions of children with ADHD have used a self-report method (e.g., a paper-and-pencil measure), which taps only those perceptions that the teacher is aware of and willing to admit, thereby introducing the potential confound of social desirability. Therefore, it is important to investigate teachers’ perceptions and attitudes using more indirect methods. This study incorporated both explicit and implicit measures to gain a better understanding of student teachers’ perceptions of ADHD. In addition, social desirability and its relationship to perceptions was evaluated to determine
whether teachers who endorse more positive perceptions of ADHD make more attempts to present themselves in a favorable light.

The explicit measure of teachers’ perceptions used in this study included both a First Impressions and Predictions section, which participants completed twice—once after viewing a short video clip of a child in a school classroom exhibiting behaviors consistent with ADHD and a second time after viewing a child displaying “normal” behavior. Children in the videos were not identified with labels, so participants’ ratings were based on their perceptions of behavior only. The two implicit measures included the KADD, which is an error-choice measure disguised as a knowledge test of ADHD, and an adapted version of the IAT, which is a computerized task designed to measure attitude bias via strengths of automatic associations as measured by response latencies to congruently and incongruently paired stimuli.

Explicit and Implicit Perceptions of ADHD

The first objective of this study was to obtain preliminary information regarding student teachers’ explicit and implicit perceptions of ADHD, including the extent to which teachers’ implicit perceptions are related to those that they consciously report. Although a specific hypothesis was not made regarding teachers’ explicit perceptions, it was expected that teachers would be somewhat guarded in their ratings of a child who exhibited symptoms of ADHD. It was found, however, that student teachers endorsed more negative impressions of a child portrayed as exhibiting stereotypical ADHD behaviors than a “normal” child. They also endorsed that the child with ADHD symptoms would be less successful in future education and career endeavors than a
“normal” child. This is consistent with previous research findings indicating that teachers possess unfavorable attitudes toward behaviors characteristic of ADHD (Biboun-Nakou et al., 2000; Brook et al., 2000; Cornett-Ruiz & Hendricks, 1993).

Based on the aforementioned literature regarding teachers’ unfavorable attitudes toward ADHD behaviors, it was hypothesized that teachers’ unconscious, or implicit perceptions, of children with ADHD would also be negative. The findings of the current study are mixed. On one of the implicit measures, the KADD, teachers reported neutral attitudes toward ADHD. However, on the other implicit measure, the IAT, results suggest that student teachers exhibited a preference for non-ADHD-related stimuli relative to ADHD-related stimuli. Participants responded more slowly to items within the incompatible blocks of the IAT (e.g., pleasant and ADHD) than they did to items in the compatible blocks (e.g., unpleasant and ADHD), indicating that they exhibit attitude bias against ADHD behaviors.

While the reason for the discrepancy between the implicit measures is unclear, the results for this question as a whole suggest that teachers do exhibit some negativity in their perceptions of and attitudes toward ADHD. It is plausible that the mixed results for the two implicit measures in this study are a result of the instruments measuring two different constructs. The original IAT has been well-studied and used in many contexts to measure attitudes toward out-groups via relative strengths of associations. The KADD, on the other hand, was recently developed as an exploratory measure and has a much more meager literature base relative to the IAT. Because the KADD is a fairly new instrument and is not well validated, it may be that the KADD measures a construct unrelated to attitudes. Because there is a breadth of research and information on the IAT
compared to only one known published study of the KADD, one might be inclined to give more credibility to the results of the IAT. However, because the measure used in this study was an adaptation of the original IAT, it is uncertain to what extent the construct being measured can be generalized from that being measured in the original version of the test.

Explicit attitudes as measured by the first impressions section of the Direct Attitude Measure were moderately related to implicit attitudes on both the KADD and the IAT; however, the predictions section of the explicit measure was not significantly related to either implicit measure. It was expected that both sections of the explicit measure would be moderately, and not highly related, to the implicit measure due to the confound of social desirability in self-report measures. It is possible that the items of the predictions scale measure a different construct than those that compose the first impressions scale and that this construct is not related to attitudes. It is also feasible that these differences are a result of prediction being a more abstract concept than first impressions because it refers to the future.

Overall, findings suggest that student teachers perceived a child who displayed ADHD symptoms more negatively than a “normal” child. While the finding is not particularly surprising, it is somewhat disconcerting, as teachers’ attitudes toward children will likely be reflected in their interactions with the students, thereby potentially setting children up for a myriad of academic, social, and emotional difficulties (Brophy & Good, 1974; Cooper, 1979; Cooper & Good, 1983; Eccles et al., 1990; Fazio et al., 1981; Graham & Barker, 1990; Rosenthal, 1974). If teachers’ bias against stereotypical ADHD behaviors leads to bias against children, and the children perceive that they are
being treated differently, there is considerable potential for the development of negative self-fulfilling prophecies.

The second objective of this study was to examine the relationship between social desirability and teachers' implicit and explicit perceptions of ADHD. Results revealed that, overall, there were few meaningful correlations between social desirability and explicit or implicit measures of perceptions of ADHD.

An unexpected finding was the relationship between the First Impressions scores for the "normal" child and social desirability, indicating that those attempting to present themselves in a socially desirable manner endorsed more negative ratings of the "normal" child. These results are not what one would expect, but may be indicative of participants minimizing just how negatively they perceived this child to be. Because the "normal" child in the video was purposely portrayed in a manner that was not too extreme or overly positive, it is possible that the few off-task behaviors that he exhibited (e.g., getting up to sharpen his pencil once) were perceived by some as negative, including those for whom social desirability is an issue.

Social desirability scores were positively correlated with participants' implicit perceptions of ADHD on the KADD, suggesting that as participants endorsed more positive attitudes toward ADHD, they exhibited more social desirability. Although social desirability scores were not significantly correlated with ratings on the IAT or direct attitude measure, they were in the expected direction (note that higher scores on the direct attitude measure and IAT are both indicative of more negativity). If participants' perceptions of ADHD were influenced due to concerns about social desirability, one would expect that all measures would be more highly correlated. It is possible that
participants generally perceive negativity toward children with ADHD to be socially acceptable, in which case, responding in a socially desirable manner is not an issue. This theory is consistent with participants' overall negativity on both the explicit and implicit measures.

The third objective of the study was to examine the relationship between teachers' perceptions as measured by the KADD and the ADHD-adapted IAT. An inverse, moderate correlation was found between these two measures, indicating that although they are not highly associated, there is some relationship between them. While a specific hypothesis was not made regarding the relationship of the KADD and adapted IAT, the direction of the correlation is consistent with what one would expect of instruments designed to measure the same construct.

Summary

Findings of this study suggest that student teachers view a student portrayed as exhibiting symptoms consistent with ADHD more negatively than a "normal" child in terms of their self-reported first impressions of the child as well as their predictions for the child's future success. Participants' perceptions and attitudes, as measured by two implicit measures, however, were mixed, with results from one measure indicative of neutral attitudes toward ADHD, while results from another measure were suggestive of an implicit attitude bias against ADHD behaviors. Overall, social desirability did not appear to be meaningfully associated with student teachers' implicit or explicit perceptions of children with ADHD. The key findings seem to indicate that student
teachers generally exhibit more negative perceptions of stereotypical ADHD behaviors than "normal" behaviors.

Although teachers may be unaware of how their attitudes and behaviors affect children, it can have rather significant consequences for children. Therefore, it is important to help teachers become more aware of their attitudes and their potentially negative impact on children. One way to increase awareness of attitudes toward children with ADHD is to educate teachers regarding what ADHD is and what it is not. For instance, it might be helpful for teachers to know that children with ADHD do not intentionally exhibit disruptive behaviors, but instead display behaviors that are not entirely in their control. Another way to increase awareness, and perhaps, minimize negativity, is to educate teachers regarding how to treat the behavioral difficulties associated with ADHD in the classroom. Attitude bias against ADHD as measured by the IAT is based on the automatic mapping of stereotypical ADHD behaviors with other "unpleasant" objects or events. With training, teachers may begin to feel more competent in their ability to manage these behaviors, and therefore, perceive them in a less negative light. Information obtained from the IAT may also help teachers become aware of negative attitudes of which they are not currently aware. This awareness may increase teachers’ motivation to change to help better serve students. In addition to incorporating training on ADHD as a component in teacher education programs, consultation with school psychologists regarding how to develop and implement interventions may also be beneficial. If teachers feel they have some control or a level of competence in dealing with these behaviors, they may be less likely to convey negative attitudes toward children who exhibit the behaviors. There is research to support this, as
teachers' attitudes appear to be mediated by perceived level of competence in teaching
students with disabilities (Brophy & McCaslin, 1992; Li, 1985; Rizzo & Vispoel, 1991).

Limitations and Future Directions

There are a number of limitations to take into account when interpreting the results of this study. First, because participants were obtained from a rural area in northeastern Pennsylvania, they may not be representative of the student teacher population as a whole. Most of the participants were young and female, however, which is true of the majority of student teachers. Because participation was voluntary, it is possible that only the higher achieving teachers volunteered and completed the study. As such, the quality of the teachers may have influenced the results in some way. For example, it is possible that teachers who were lower achievers and/or were less competent in their teaching abilities would have viewed ADHD more negatively. In addition, participants in this study were limited to preservice teachers and did not include teachers currently in service. It was assumed that preservice teachers would be a purer sample and would be less likely to have preconceived beliefs about ADHD because they have had fewer opportunities to interact with children with ADHD. Given the research suggesting that teachers tend to have unfavorable attitudes toward children with ADHD, it is possible that teachers who are currently in service would have more negative perceptions of ADHD than preservice teachers; however, it likely depends on a number of factors, including their knowledge of ADHD, experience teaching children with ADHD, the quality of those experiences (e.g., whether they were primarily positive or negative), and level of success in teaching children with ADHD. Nonetheless, if
preservice teachers exhibit negativity toward ADHD without having interacted with children with ADHD, this may set them up for negative interactions with students from the beginning.

Second, the nature of the study was such that the student teachers’ perceptions of an actual student with ADHD may have not been accurately measured or fully reflected in this study. Specifically, the student that was presented in the videotape prior to the administration of the direct attitude measure was based on a hypothetical case scenario, rather than a student who was physically in their classrooms. In addition, the presentation of the student was limited to 5 minutes, which may have had a different impact on student teachers’ perceptions than if the teacher had spent several hours a day interacting with the student on a regular basis. Although it is unclear how the time-limited observation of the student or the lack of interaction with the student would affect student teachers’ perceptions of the student, it seems plausible that if teachers are willing to admit to having negative perceptions after just 5 minutes of observing the student, increased exposure to the student and his behaviors might worsen their perceptions. On the other hand, increased exposure would also allow teachers to observe the child’s positive characteristics, which might then have a positive impact on teachers’ perceptions. In addition, it should be noted that implicit measures, such as the KADD and the IAT, assess attitudes toward ADHD, rather than attitudes toward children with ADHD. It is suggested that future research attempt to address this limitation, perhaps through the use of actual students with ADHD or by providing opportunities for the teacher to interact with the student via virtual (computerized) interactions. It is important to investigate interactions with actual children with whom teachers will interact, as the
attitude toward ADHD itself is not nearly as important as the resulting dynamic between teacher and child and the impact that this interaction has on the child.

A related limitation of this study, which applies only to the videotape and associated explicit measure, was that the child portrayed in the videotape as exhibiting ADHD symptomatology was an actor, not an actual child with ADHD. Therefore, the manner in which the behaviors were portrayed was artificial and “coached” by the experimenter, which may be different than how the behaviors would be exhibited spontaneously by a child with ADHD. It is unknown whether participants would perceive an actual child with ADHD differently than they did the child actor in this study; however, because the child was purposely portrayed as having somewhat moderate, but not severe, symptoms of the disorder, it is likely that more severe student behaviors would produce more negative student teacher perceptions. Future research in this area is necessary to examine how the severity of behavioral difficulties exhibited by students with ADHD affects student teachers’ perceptions. It may be that students who only exhibit symptoms of inattention would be perceived as less disruptive, and therefore, less negatively, than those students who exhibit just hyperactive-impulsive symptoms or both inattention and hyperactive-impulsive behaviors. It is important to examine this further to guide the development of training for student teachers who will inevitably have children with various forms of ADHD in their classroom. The impact of the gender of the child in the video clip must also be considered. If females had been used to portray the student with ADHD behaviors, it is possible that student teachers would have perceived the behaviors more negatively than if displayed by a male student. This prediction is based on both the fact that ADHD, particularly hyperactive-impulsive
type, is less prevalent in females and the stereotypical expectation that females exhibit fewer behavioral difficulties. Future research is necessary to examine how a student’s gender affects teachers’ perceptions of ADHD behaviors.

Despite the finding that student teachers in this study exhibited negative perceptions of children portrayed as exhibiting ADHD symptoms, it cannot be assumed that their perceptions would be reflected in their behavior toward students with ADHD. If teachers are aware that they possess negative perceptions or attitude bias, but somehow manage to suppress or conceal this bias in their interactions with students, then negative perceptions become less of an issue; however, research suggests that when people attempt to suppress certain thoughts, a paradoxical effect occurs, causing people to think even more about those thoughts (Wenzlaff & Wenger, 2000). Therefore, it may be very difficult for teachers to have unfavorable perceptions or attitudes toward ADHD and behave in a manner that does not convey that. Nonetheless, it is the actions of the teachers and how they are interpreted by children that ultimately lead to self-fulfilling prophecies. Therefore, additional research is necessary to examine teachers’ behaviors toward children in the classroom and whether the behaviors are consistent with the explicit and implicit perceptions of the students. Another issue to consider with regard to the attitude-behavior relationship is whether teachers who have negative perceptions of ADHD are referring children who display these behaviors for psychoeducational evaluations. It is possible that teachers who have negative perceptions of ADHD would refer children exhibiting these behaviors earlier, and perhaps, more frequently than those who have more positive attitudes. A teacher’s competence in his or her ability to manage ADHD-like behaviors may also affect not only perceptions, but the rate at which he or
she refers children for evaluation. Additional research is necessary to investigate the relationship between teachers' perceptions of ADHD and referrals to the school psychologist and/or multidisciplinary team for evaluation to both prevent unnecessary referrals and facilitate the implementation of positive behavior management strategies.

Finally, it is important to note that this study utilized instruments that have not been extensively researched, and therefore, are not well validated. In particular, only one published study currently exists regarding the use of the KADD. Therefore, it is unclear whether it truly measures implicit attitudes toward ADHD or some other construct. The First Impressions and Predictions measures were also adapted from a measure used in a previous study, and although it was designed to measure attitudes, it is unclear whether the items accurately reflect an attitude bias or if it is measuring some other construct. In addition, although the IAT has been rigorously evaluated, this study utilized an adapted version of the measure, which has not been subject to professional scrutiny; however, because the IAT has been used with a variety of stimuli, there is no reason to believe that it is not valid. Opponents of the IAT, however, have expressed some concerns regarding its use. In particular, Fazio and Olson (2003) believe that research using the IAT is atheoretical and, specifically, that it does not take into consideration the possibility that attitudes can influence judgments and behavior through both spontaneous and deliberative, or more controlled, means. Another critique is the implication that implicit and "unconscious" are synonymous when there is no evidence that individuals are unaware of their attitudes. Fazio and Olson also argue that research examining the correspondence between implicit and explicit measures is unproductive and that the relationship is highly variable because it is dependent on motivational factors. Moreover,
there is some evidence that both motivational factors and the opportunity to deliberate have a moderating influence on the attitude-behavior relationship. People whose automatically activated attitudes are negative, but are highly motivated and have the opportunity to deliberate at the time that the explicit response is considered, may overcompensate for this negativity on an explicit measure (Fazio, 1990; Fazio & Towles-Schwen, 1999). Therefore, more research on the predictive validity of the IAT is needed to clarify the role of motivational factors. Additional research is necessary to make more definitive conclusions regarding the psychometric properties of both the KADD and the IAT. If the validity of these instruments as measures of implicit perceptions of ADHD cannot be adequately established, then other measures will need to be developed to facilitate research in this area.

Conclusions

This study is one of very few that has examined teachers’ implicit perceptions of ADHD, and it is the first to use the IAT as a measure of attitude bias toward students with ADHD. The results of this study provide evidence that student teachers, like teachers currently in service, have unfavorable perceptions of ADHD. It is of particular importance to note that these perceptions and attitudes have begun to form even prior to participants having formally taught and interacted with students in the classroom. Thus, it is imperative that student teachers receive education regarding ADHD and effective methods of intervention as early as possible in their training, but at the least, prior to student teaching. It is possible that through this type of education and training, student teachers will become more aware of their own perceptions and attitudes regarding
stereotypical ADHD behaviors, which could prevent, or at least buffer, to some extent, the development of negative attitudes. Increased awareness of negative attitudes is a necessary first step in changing teachers' behaviors; however, increased awareness alone does not necessarily translate into more positive behaviors. In order for positive change to occur, teachers would still have to show a willingness and a desire to change their attitudes and/or behaviors toward children given their increased insight regarding their own beliefs and feelings toward them.
REFERENCES


Appendix A:
Informed Consent

Student Teachers’ Beliefs About Students in the Classroom

Introduction
Dr. Gretchen Gimpel, a faculty member in the Psychology Department, and Hollie Archibald, a Psychology graduate student, are conducting a research study to investigate student teachers’ beliefs about children in the classroom. You have been asked to take part because you are a student teacher. Approximately 50 individuals will take part in this study.

Procedures
If you agree to be in this study, you will be asked to complete a series of computerized tasks, view two short video clips of students, and complete four brief paper and pencil measures. The computerized task will consist of viewing lists of words and categorizing them into the categories (e.g., pleasant or unpleasant) as quickly as possible by pressing a specified key. The amount of time required for participation is estimated to be approximately 60-80 minutes. The procedures will be completed at arranged times during April and May of 2005 and will take place at arranged locations in north central Pennsylvania. These locations may include, but are not limited to the Elementary Education Departments at Susquehanna University, Bloomsburg University, and Bucknell University.

New Findings
You will be informed of any significant new findings during the course of this study. If new information is obtained that is relevant or useful to you, or if the procedures and/or methods change at any time throughout this study, your consent to continue participating in this study will be obtained again.

Risks
There are no anticipated risks to this research. You may experience some slight psychological distress during the completion of the computerized task (as you will be required to respond very quickly) and/or during the completion of the paper and pencil measures regarding your beliefs about students in the classroom; however, these risks are considered minimal.

Benefits
There may or may not be any direct benefit to you from these procedures. One potential benefit that you may experience through your participation is an increased awareness of your beliefs about students in the classroom. The investigators may learn more about the relationships among children’s academic performance, children’s classroom behaviors, and teachers’ beliefs about students.
**Explanation and Offer to Answer Questions**

Hollie Archibald has explained this study to you and answered questions you have at this time. If you have other questions or research-related problems, you may reach Hollie Archibald at (570) 205-2878 or Dr. Gretchen Gimpel at (435) 797-0721.
Student Teachers’ Beliefs About Students in the Classroom

Voluntary Nature of Participation and Right to Withdraw without Consequence
Participation in research is entirely voluntary. You may refuse to participate or withdraw at any time without consequence.

Confidentiality
Research records will be kept confidential, consistent with federal and state regulations. Information related to you will be treated in strict confidence. You will be assigned a code number and this number will be used when the data is stored in the computer. This code number will be destroyed at the conclusion of this study. Public presentations of the results of this study will in no way identify you. All data will be kept in a locked file cabinet which will be accessible only to the researchers. The data will be kept for seven years and then destroyed.

IRB Approval Statement
The Institutional Review Board (IRB) for the protection of human participants at USU has reviewed and approved this research study. You may call the IRB at (435) 797-1821 with any questions regarding your rights or the approval of this project.

Copy of Consent
You have been given two copies of this Informed Consent form. Please sign both and retain one copy for your files.

Investigator Statement
“I certify that the research study has been explained to the above individual by me or my research staff, and that the individual understands the nature and purpose, the possible risks, and benefits associated with taking part in this research study. Any questions that have been raised have been answered.”

Signature of PI
Gretchen A. Gimpel, Ph.D.
Principal Investigator
(435) 797-0721

Signature of Student Researcher
Hollie K. Archibald, M.S.
Student Researcher
(570) 205-2878

Signature of Subject
I have read and understand this consent form and I am willing to participate in this study.

Signature ___________________________ Date ______________________
Appendix B:

Demographic Information

Please read the following items and respond to each.

1) I am:
   ____ male
   ____ female

2) My ethnic background is:
   ____ Caucasian
   ____ Latino/a
   ____ American Indian / Pacific Islander
   ____ Asian
   ____ Other (Please specify): __________________________

3) I am _____ years old.

4) My current student status is:
   ____ An undergraduate student (please indicate current level _____________)
   ____ A graduate student (please indicate current level _____________)
   ____ Other (please specify): __________________________

5) My major in school is/was ________________________________.

6) Do you currently hold an educator license through the Pennsylvania State Office of Education (or any other state office of education) to teach in the schools?
   ____ Yes
   ____ No

7) Have you ever been employed as a teacher (excluding student teaching and substitute teaching)?
   ____ Yes
   ____ No

   If yes, please answer the following:
   a) Are you currently teaching?
      ____ Yes
      ____ No

   b) How many years have you taught? _____ (please fill in)
c) What grade levels have you taught? ______ (check all that apply)
   ___ Elementary
   ___ Middle School
   ___ High School
   ___ Other (Please specify): ____________________________

8) Have you ever student taught in a classroom?
   ___ Yes
   ___ No

9) Do you know or have you worked with a child diagnosed with ADHD?
   ___ Yes
   ___ No

   If yes, please answer the following:
   a) In what capacity do you know or have you worked with a child with ADHD?

   b) How many children with ADHD have you worked with? ______

10) What training have you had regarding ADHD (e.g., workshop, portion of a class, read on own)?
    ___ Attended a workshop
    ___ Attended a class, in which one portion was devoted to ADHD
    ___ Read about ADHD on my own
    ___ Other (Please specify): ____________________________
Appendix C:

Direct Attitude Measure (First Impressions)

**Instructions:** As a result of working with a wide variety of children, teachers are often quite effective at predicting their behavior, even when it must be based on relatively little concrete information. Please read each item below and then predict how frequently that descriptor applies to the child you just viewed in the videotape, relying on your past experience in working with children. Please respond to all questions.

<table>
<thead>
<tr>
<th></th>
<th>Almost Never</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Able to get along with others</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>2. Falls behind in schoolwork</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>3. Engages in helpful and pleasant behaviors</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>4. Feels accepted by teachers and staff</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>5. Requires a lot of the teacher’s time</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6. Frequently selected by peers for recess activities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>7. A trouble-maker in class</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>8. Exhibits low self-esteem</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>9. Follows the teacher’s instructions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>10. Likely to be placed in remedial work</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>11. Frequently displays on-task behavior</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>12. Popular with peers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>13. Scores low on intelligence tests</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>14. Displays deviant behavior in class</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>15. Would require assistance beyond regular classroom instruction</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>16. Gets good evaluations from teachers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>17. Feels confident about academic abilities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
18. Offers assistance to teachers
19. Less likely to participate in classroom activities
20. Requires considerable one-on-one attention
Appendix D:

Direct Attitude Measure (Predictions)

This section is designed to predict future success of children based on first impressions by the teacher. This could be beneficial for the sake of early detection and intervention for either gifted and talented or learning disabled children. Please mark an X on the line that you believe best describes this student.

1. I feel this student should be in a:
   regular classroom ___ ___ ___ ___ ___ special classroom

2. I feel this student:
   has a handicap ___ ___ ___ ___ ___ does not have a handicap

3. I feel this student:
   gets good grades ___ ___ ___ ___ ___ does not get good grades

4. I feel this student will:
   be able to go ___ ___ ___ ___ ___ will not be able to go to college

5. I feel this student will some day get:
   a good paying job ___ ___ ___ ___ ___ a poor paying job

6. I feel this student should:
   have an evaluation ___ ___ ___ ___ ___ not have an evaluation

7. I feel this student should:
   be on medication ___ ___ ___ ___ ___ not be on medication
Appendix E:

Test of Knowledge About Attention-Deficit/Hyperactivity Disorder

*Directions*
This is a test of your knowledge about attention deficit hyperactivity disorder (ADHD). The questions on this test are taken from the findings of scientific research. You are not expected to have read the research reports, but by using your experience and general knowledge you will be able to pick the correct answer to many of these questions. Some people will do much better than others on this test because of their experience or because of their training in special education, rehabilitation, or psychology. Read each question carefully and select the one alternative that you consider to be the correct answer. Select an answer for every question, even if you are uncertain of the correct answer. THERE IS NO PENALTY FOR GUESSING. There is no time limit for the completion of this test, but you should work as rapidly as you can.

*Sample Question*

What is the capital of Iowa?

___ A. Sioux City
___ B. Waterloo
___ C. Iowa City
___ D. Des Moines

1. The primary symptoms of ADHD are:
___ a. learning problems and/or school failure
___ b. noncompliance, argumentativeness, and/or temper outbursts
___ c. low self-esteem, depression, and/or anxiety
___ d. inattention, impulsivity, and/or overactivity

2. Children with ADHD are ___ times more likely to have expressive language problems than non-ADHD children.
___ a. equal/no different
___ b. 2 times
___ c. 4 times
___ d. 6 times

3. What percent of students with ADHD pursue higher education?
___ a. 4%
___ b. 14%
___ c. 30%
___ d. 41%
4. Of children under the age of 16 who are diagnosed with ADHD, boys are _____ times more likely to be prescribed the drug Ritalin than girls.
   ___ a. equal/no different
   ___ b. 2 times
   ___ c. 4 times
   ___ d. 8 times

5. In a recent study, _____ percent of sexually abused children met the criteria for ADHD.
   ___ a. 24%
   ___ b. 37%
   ___ c. 55%
   ___ d. 67%

6. ADHD is most frequently accompanied by which of the following childhood psychological disorders?
   ___ a. antisocial personality disorder
   ___ b. bipolar (or manic/depressive) disorder
   ___ c. Tourette’s Syndrome
   ___ d. conduct disorder

7. Of adults on probation for drug-related crimes, _____ exhibited at least some ADHD-related behavior.
   ___ a. 1/5
   ___ b. 1/4
   ___ c. 1/2
   ___ d. 2/3

8. Children with ADHD are ____ percent more active throughout the day than children without ADHD.
   ___ a. 41%
   ___ b. 30%
   ___ c. 22%
   ___ d. 15%
9. In a 15-year follow-up study, what percentage of ADHD children were small business owners as adults?
   ___ a. 20%  
   ___ b. 25%  
   ___ c. 31%  
   ___ d. 40%

10. What percent of children diagnosed with ADHD have also been found to have a lifetime history of an anxiety disorder?
    ___ a. 50%  
    ___ b. 33%  
    ___ c. 18%  
    ___ d. less than 1%

11. Which of the following is true about the treatment of ADHD?
    ___ a. medication alone is usually all that is necessary  
    ___ b. individual counseling is almost always necessary  
    ___ c. changes in diet are often necessary  
    ___ d. none of the above

12. What percent of children with ADHD come from families that are disorganized and have a parent who exhibits psychopathology?
    ___ a. 5%  
    ___ b. 15%  
    ___ c. 25%  
    ___ d. 35%

13. ADHD continues from childhood into adolescence in ___ % to ___ % of children suffering from ADHD.
    ___ a. 58% to 72%  
    ___ b. 32% to 49%  
    ___ c. 16% to 27%  
    ___ d. 5% to 12%

14. Of all children with ADHD, _____ also suffer from bipolar (or manic/depressive) disorder.
    ___ a. 1/10  
    ___ b. 1/5  
    ___ c. 1/3  
    ___ d. 1/2
15. A recent follow-up study found that adults who were never diagnosed with ADHD achieved _____ years more education (including higher education) than adults who were diagnosed with ADHD in childhood.
   __ a. 6.5 years more
   __ b. 3.5 years more
   __ c. 1.5 years more
   __ d. equal/no difference

16. Children with ADHD are most likely to have _____ deficits.
   __ a. motor coordination
   __ b. visual acuity
   __ c. receptive language usage
   __ d. auditory sensation

17. Which of the following childhood psychological disorders is more prevalent than ADHD?
   __ a. Tourette’s Syndrome
   __ b. antisocial personality disorder
   __ c. bipolar (or manic/depressive) disorder
   __ d. anxiety disorder

18. _____ percent of ADHD children abuse illegal drugs as adults.
   __ a. 4%
   __ b. 10%
   __ c. 22%
   __ d. 38%

19. Poor parent management is believed to be the primary cause of ADHD development in _____ of all children.
   __ a. 1/3
   __ b. 1/5
   __ c. 1/10
   __ d. none/no relationship

20. _____ percent of ADHD children are eventually placed in formal special educational programs for learning disabled or behaviorally disordered children.
   __ a. 10%
   __ b. 25%
   __ c. 40%
   __ d. 55%
21. The most common side effects of Ritalin and other stimulant medications are:
   ___ a. decreased appetite and insomnia
   ___ b. zombie-like appearance and behavior
   ___ c. depression and anxiety
   ___ d. headaches and stomach problems

22. The unemployment rate for adults who were diagnosed with ADHD in childhood is ___ percent.
   ___ a. 15%
   ___ b. 7%
   ___ c. 3%
   ___ d. less than 1%

23. ___ percent of ADHD children have a learning disability in reading, spelling, or math.
   ___ a. 9%
   ___ b. 16%
   ___ c. 24%
   ___ d. 35%

24. According to the most reliable estimates, between ___ % and ___ % of all school-age children suffer from ADHD.
   ___ a. 18% and 21%
   ___ b. 9% and 12%
   ___ c. 3% and 5%
   ___ d. 1% and 2%

25. What is the most effective non-medication treatment for ADHD children?
   ___ a. sensory-integration therapy
   ___ b. dietary management (elimination of sugar and/or food additives)
   ___ c. long-term psychotherapy
   ___ d. training parents in more effective child management skills

26. Adolescents with ADHD have a ___ times greater risk for drug and alcohol abuse than non-ADHD adolescents.
   ___ a. 9 times
   ___ b. 5 times
   ___ c. 2 times
   ___ d. equal/no difference
27. In addition to their primary problems, many children with ADHD:
   _ a. do not do well in school, often working well below their potential
   _ b. display temper outbursts and oppositional-defiant behavior
   _ c. have problems keeping friends
   _ d. all of the above
   _ e. none of the above

28. ADHD children as adults are ____ times more likely to have an ongoing mental disorder than non-ADHD children as adults.
   _ a. equal/no difference
   _ b. 3 times
   _ c. 5 times
   _ d. 9 times

29. Environmental causes (poverty, chaotic family style, overcrowding, food additives, or pollution) are responsible for ____ percent of ADHD development in children.
   _ a. 48%
   _ b. 36%
   _ c. 14%
   _ d. none/no relationship

30. Children with ADHD tend to have the most significant deficits in ____________.
   _ a. memory and information recall tasks
   _ b. receptive language usage
   _ c. standard neuropsychological test batteries
   _ d. complex problem-solving strategies and organizational skills

31. It is estimated that ____ of children with ADHD will die from either suicide or accidental injury before the age of 30.
   _ a. less than 1%
   _ b. 3%
   _ c. 7%
   _ d. 11%

32. Children with ADHD are ____ times more likely than non-ADHD children to suffer from sleep problems.
   _ a. equal/no difference
   _ b. 2 times
   _ c. 4 times
   _ d. 6 times
33. Between ____% and ____% of children suffering from ADHD will be held back at least one grade before reaching high school.
   ___ a. 3% and 10%
   ___ b. 14% and 28%
   ___ c. 42% and 57%
   ___ d. 60% and 73%

34. On standardized intelligence tests, children with ADHD score an average of ____ to ____ points below children without the disorder.
   ___ a. 22 to 26
   ___ b. 14 to 18
   ___ c. 4 to 8
   ___ d. none/no difference

35. Which class of psychotropic medication is most frequently used in treating children with ADHD?
   ___ a. barbiturates
   ___ b. antidepressants
   ___ c. stimulants
   ___ d. antipsychotics

36. In 1995, what percentage of adults diagnosed with ADHD as children were living at or below the poverty level?
   ___ a. 6%
   ___ b. 10%
   ___ c. 18%
   ___ d. 24%

37. Which of the following has NOT been found to be a significant factor in either the continuation or remission of ADHD from childhood into adolescence?
   ___ a. intensity of treatment
   ___ b. family history of ADHD
   ___ c. psychosocial maladjustment
   ___ d. presence of other psychological disorders

38. Of all motor vehicle accidents involving adolescents or adults with ADHD, ____ percent were cited with improper driving.
   ___ a. 85%
   ___ b. 76%
   ___ c. 62%
   ___ d. 51%
39. What percent of ADHD children suffer from antisocial personality disorder as adults?
   ___ a. 48%
   ___ b. 32%
   ___ c. 15%
   ___ d. 4%

40. Up to ___ of all ADHD children have at least one additional behavioral or emotional disorder?
   ___ a. 1/4
   ___ b. 1/3
   ___ c. 1/2
   ___ d. 2/3

41. The average scores of ADHD children on standardized achievement tests are ____ the normal range.
   ___ a. above
   ___ b. within
   ___ c. below
   ___ d. significantly below

42. There is a ____ percent chance that the mother of an ADHD child will suffer from an anxiety disorder.
   ___ a. 20%
   ___ b. 35%
   ___ c. 50%
   ___ d. 65%

43. Approximately ____ of all children with ADHD will drop out of school before graduating from high school.
   ___ a. 3/5
   ___ b. 1/2
   ___ c. 1/4
   ___ d. 1/5

44. Some hyperactive-impulsive or inattentive symptoms that cause impairment must be present before the age of ____ for a diagnosis of ADHD to be made.
   ___ a. 4 years old
   ___ b. 7 years old
   ___ c. 9 years old
   ___ d. 13 years old
Appendix F:

Marlowe-Crowne Social Desirability Scale

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is TRUE or FALSE as it pertains to you personally.

1. Before voting I thoroughly investigate the qualifications of all the candidates. T F
2. I never hesitate to go out of my way to help someone in trouble. T F
3. It is sometimes hard for me to go on with my work if I am not encouraged. T F
4. I have never intensely disliked someone. T F
5. On occasion I have had doubts about my ability to succeed in life. T F
6. I sometimes feel resentful when I don’t get my way. T F
7. I am always careful about my manner of dress. T F
8. My table manners at home are as good as when I eat out in a restaurant. T F
9. If I could get into a movie without paying and be sure I was not seen I would probably do it. T F
10. On a few occasions, I have given up doing something because I thought too little of my ability. T F
11. I like to gossip at times. T F
12. There have been times when I felt like rebelling against people in authority even though I knew they were right. T F
13. No matter who I’m talking to, I’m always a good listener. T F
14. I can remember “playing sick” to get out of something. T F
15. There have been occasions when I took advantage of someone. T F
16. I’m always willing to admit it when I make a mistake. T F
17. I always try to practice what I preach. T F
18. I don’t find it particularly difficult to get along with loud mouthed, obnoxious people.  T  F
19. I sometimes try to get even rather than forgive and forget.  T  F
20. When I don’t know something I don’t at all mind admitting it.  T  F
21. I am always courteous, even to people who are disagreeable.  T  F
22. At times I have really insisted on having things my own way.  T  F
23. There have been occasions when I felt like smashing things.  T  F
24. I would never think of letting someone else be punished for my wrongdoings.  T  F
25. I never resent being asked to return a favor.  T  F
26. I have never been irked when people expressed ideas very different from my own.  T  F
27. I never make a long trip without checking the safety of my car.  T  F
28. There have been times when I was quite jealous of the good fortune of others.  T  F
29. I have almost never felt the urge to tell someone off.  T  F
30. I am sometimes irritated by people who ask favors of me.  T  F
31. I have never felt that I was punished without cause.  T  F
32. I sometimes think when people have a misfortune they only got what they deserved.  T  F
33. I have never deliberately said something that hurt someone’s feelings.  T  F
VITA

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Telephone: (435) 760-3659

Educational History

Utah State University, Logan, UT
Degree seeking: Ph.D. in Psychology
Degree: Master of Science, August 2003
Graduate GPA: 3.89

University of North Dakota, Grand Forks, ND
Major: Psychology
Degree: Bachelor of Science, May 1998
Cumulative GPA: 3.92
Psychology GPA: 3.95

University of Mary, Bismarck, ND
Major: Social and Behavioral Sciences
GPA: 3.88

Clinical Experience

Certified Professional Counselor Intern
Mt. Logan Clinic, Logan, Utah.
Responsibilities: Conduct initial psychological evaluations; provide
individual and family therapy services for children, adolescents, and adults;
design treatment plans; monitor patient progress; prepare case notes and
reports; collaborate with other professionals (e.g., physicians) involved in
patient care. 6-10 hours weekly. Supervisor: Monique Frazier, Ph.D.

School Psychologist
Ogden School District, Ogden, Utah.
Responsibilities: conduct academic, cognitive, behavioral, and social-
emotional assessments; prepare psychoeducational reports; design and
implement behavior management and modification activities; behavioral and
instructional consultation with teachers, parents, and support service
professionals; consultation with community mental health providers,
rehabilitative services, and child protective agencies; attend and facilitate IEP
Behavioral Specialist Consultant/Mobile Therapist
CONCERN Professional Services for Children, Youth, and Families, Lewisburg, PA.
Responsibilities: conduct psychosocial assessments; design treatment plans
for foster and community children and their families; oversee the delivery of behavioral health rehabilitation services; provide therapy services for children and their families; monitor client progress; prepare case notes and progress reports. 20 hours weekly. Supervisor: Elizabeth Dietrich.

Clinical Psychology Resident
Geisinger Medical Center, Department of Psychiatry, Danville, PA.
Responsibilities: conduct initial psychological evaluations; conduct psychoeducational evaluations; provide individual and family-based therapy services to children and their families; conduct suicide risk assessments and other emergency services for both children and adults; facilitate group therapy sessions; design treatment plans; monitor progress; prepare case notes and reports; consult with teachers and support services professionals; provide consultation/liaison services within the hospital for both children and adults. 40-50 hours weekly. Supervisors: Paul Kettlewell, Ph.D., Heather Hoover, Ph.D., Christine Chew, Ph.D.

Child and Family Psychosocial Rehabilitation Specialist
Summit Counseling Services, Preston, ID.
Responsibilities: provide in-home counseling services to children and their families; conduct ongoing behavioral and social-emotional assessment; design treatment plans; conduct individual and family therapy sessions; conduct parent training; monitor progress; prepare case notes; consult with teachers and support services professionals. 10-14 hours weekly. Supervisors: Michael Hinds, M.S., Gretchen Gimpel, Ph.D.

School Psychology Intern
Granite School District, Salt Lake City, Utah.
Responsibilities: conduct academic, cognitive, behavioral, and social-emotional assessments; prepare psychoeducational reports; provide individual and/or group counseling or skills training; design and implement behavior management and modification activities; behavioral and instructional consultation with teachers, parents, and support services professionals; consultation with community mental health providers, rehabilitative services, and child protective agencies; attend IEP
meetings; attend multidisciplinary team meetings weekly.
20 hours weekly. Field supervisor: Kathleen Keller, Ph.D.

**Human Learning Center Counselor**
Human Learning Center, Utah State University, Logan, UT. Responsibilities: assess students’ cognitive abilities at pre- and post-intervention; prepare reports; design individualized training for 6-18-year-old children who have learning difficulties; train and supervise tutors responsible for conducting sessions; monitor students’ progress; correspond with parents and teachers regarding test results and student progress; attend weekly team meetings.
10 hours weekly. Supervisor: Lani Van Dusen, Ph.D.

**Disaster Response Network-Child and Adolescent Crisis Counselor**
Disaster Response Network, Northwestern Mental Health Center, Inc., Crookston, MN. Responsibilities: design and implement post-disaster programming for youth; educate communities regarding mental health concerns relating to a disaster; consult with school personnel, parents, and agencies regarding children’s mental health issues; assist flood/weather-related disaster survivors through screenings, conduct individual and group counseling, and provide referrals.
40 hours weekly. Supervisor: Ellen Feldman, M.D.

**Practicum Experience**

**Student Therapist, Child Clinical Placement**
Student Therapist, Child Clinical Placement
Student Therapist, Child Clinical Placement
Clinical Services, Center for Persons with Disabilities, Logan, UT. Responsibilities: assess child and adolescent clients’ social, emotional, and behavioral problems; conduct intake interviews; design intervention plans; conduct therapy sessions with children and families who have been referred by medical professionals; consult with medical professionals regarding clients’ progress; consult with teachers, parents, and child protective services; prepare psychological reports and treatment progress notes; attend weekly group supervision meetings, and provide referrals.
10 hours weekly. Supervisor: Gretchen Gimpel, Ph.D.

**Student Therapist, Child Clinical Placement**
Student Therapist, Child Clinical Placement
Psychology Community Clinic, Utah State University, Logan, UT. Responsibilities: assess child and adolescent clients’ social, emotional, and behavioral problems; conduct intake interviews; design intervention plans; conduct therapy sessions with children and families; consult with medical professionals, mental health professionals, teachers, parents, and child protective services; prepare psychological reports and treatment progress notes; attend weekly group supervision meetings, and provide referrals.
Student Therapist, Counseling Placement
Counseling Center, Utah State University, Logan, UT.
Responsibilities: conduct intake interviews with adult clients; design intervention plans; conduct therapy sessions; consult with medical professionals and other mental health professionals; prepare intake summaries and treatment progress notes; attend weekly group supervision and individual supervision meetings, and provide referrals.
10 hours weekly. Supervisor: Gretchen Gimpel, Ph.D.

School Psychology Student, School Placement
Riverside Preschool, Woodrow Elementary, Woodruff Elementary, Logan, UT.
Responsibilities: conduct academic, cognitive, behavioral, and social-emotional assessments; prepare psychoeducational reports; provide individual and/or group counseling or skills training; design and implement behavior management and modification activities; behavioral and instructional consultation with teachers, parents, and support services professionals; consultation with medical professionals, community mental health care providers, rehabilitative services, and child protective agencies; attend IEP meetings and multidisciplinary team meetings.
10 hours weekly. Supervisor: Donna Gilbertson, Ph.D.

Student Therapist, Clinical Placement
Psychology Community Clinic, Utah State University, Logan, UT.
Responsibilities: conduct intake interviews with adolescent and adult clients; conduct psychological assessments; design intervention plans; conduct therapy sessions; consult with medical professionals, mental health professionals, support service professionals, and parents; attend weekly group and individual supervision meetings.
10 hours weekly. Supervisor: Susan Crowley, Ph.D.

Other Professional Experience
School Counseling Program Support Assistant
Utah State University, Logan, UT.
Responsibilities: assist with administrative responsibilities for the School Counselor Preparation program; respond to inquiries and questions regarding the program; prepare materials for recruitment of applicants; maintain applicant and current student files.
20 hours weekly. Supervisor: Camille Odell, M.S.
Research Experience

Research Assistant/Parent Training Facilitator  
August 1999-2004  
Department of Psychology, Utah State University  
Responsibilities: conduct behavior management/parent training sessions for parents of children diagnosed with Attention-Deficit/Hyperactivity Disorder; monitor and document progress; attend weekly research meetings. 3 hours weekly. Supervisor: Gretchen Gimpel, Ph.D.

Research Assistant  
September 1999-June 2000  
Department of Special Education and Rehabilitation, Utah State University  
Responsibilities: recruitment of subjects; administration and scoring of measures; data entry and analyses. 10 hours weekly. Supervisor: Stephanie Peck, Ph.D.

Research Assistant  
September 1996-July 1998  
Department of Psychology, University of North Dakota  
Responsibilities: proposal of an original project; literature review; recruitment of subjects; administration and scoring of measures; data entry and analyses; manuscript preparation/submission for publication. 9 hours weekly. Supervisor: Andrea Zevenbergen, Ph.D.

Research Assistant  
September 1995-December 1995  
Department of Psychology, University of North Dakota  
Responsibilities: reviewed questionnaires; calculated data; data entry. 12 hours weekly.  
Supervisor: Thomas Petros, Ph.D.

Teaching Experience

Teaching Assistant  
January 2003-May 2003  
Department of Psychology, Utah State University  
Responsibilities: assist in preparing Psychology of Gender class lectures; grade student papers; maintain student grade records; assist instructor with teaching responsibilities. 20 hours weekly.  
Supervisor: Camille Odell, M.S.
Teaching Assistant
January 2001-June 2001
Department of Psychology, Utah State University
Responsibilities: attend weekly History and Systems of Psychology class meetings; prepare teaching outlines; grade student papers; maintain student grade records; assist instructor with daily responsibilities. 10 hours weekly. Supervisor: George Julnes, Ph.D.

Publications


Presentations


Honors and Awards

- Walter R. Borg Scholarship, Utah State University 2003-2004
- School of Graduate Studies Dean's List, Utah State University 2000-2003
- President's Honor Roll, University of North Dakota 1994-1998
- Dean's List, University of North Dakota 1994-1998
- Psi Chi (National Honor Society in Psychology) 1997-present
- Phi Beta Kappa National Honor Society 1997-present
- Presented Student Response speech on behalf of inductees 1996-present
- Golden Key National Honor Society 1996-present
- Thomas Campbell Scholarship 1994-1995
- Dean's List, University of Mary 1993-1994
- Pacesetter Scholarship, University of Mary 1993-1994
- KMOT-TV/Sunmart Scholarship 1993-1994

Additional Activities

- Big Sister Volunteer, Y Family Center, Grand Forks, ND 1997-1998
- Volunteer note-taker, Disability Support Services, UND 1997-1998
- University of Mary Concert Choir 1993-1994
Professional Offices

Golden Key National Honor Society
Co-Vice President 1996-present
Ceremonies Chairperson 1997-1998
Psychology Club 1996-1997
Public Relations Officer 1995-1998

References

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