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## The Estimated Annual Cost of ADHD to the U.S. Education System

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### Abstract

The purpose of this study was to examine and monetize the educational outcomes of students with ADHD. Data were examined from the Pittsburgh ADHD Longitudinal Study (PALS), a follow-up study of children diagnosed with ADHD in childhood and recontacted for follow-up in adolescence and young adulthood. A comprehensive educational history was obtained for all participants from Kindergarten through 12<sup>th</sup> grade. Annual economic impact was derived from costs incurred through special education placement, grade retention, and disciplinary incidents. Results indicated that, as compared to students without ADHD, students with ADHD incurred a higher annual cost to the U.S. Education system. Specifically, a student with ADHD incurred an average annual incremental cost to society of \$5,007, as compared to \$318 for students in the comparison group. These results suggest that prevention and intervention strategies are greatly needed to offset the large financial impact of educating youth with ADHD.

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Attention Deficit/Hyperactivity Disorder (ADHD) is a chronic mental health disorder characterized by deficits in attention span, impulse control, and regulation of activity level that impair daily life functioning (APA, 2000). Recent prevalence estimates assume ADHD to be present in up to 10% of children and adolescents in the United States (CDC, 2007). Because youth with ADHD typically demonstrate impairment across multiple domains of functioning (i.e., academics, peer relations, family conflict, delinquency; Barkley, 2006), the effects of this disorder are widespread. For years research has assessed the impact of ADHD upon the individual (e.g., peer relationship difficulties, Pelham & Bender, 1982; increased use of illicit substances, Mannuzza et al., 1991; and lower occupational rank, Mannuzza et al., 1993), and upon the family (e.g., strained parent-child relationships, Patterson & Chamberlain, 1994; Mash & Johnston, 1990). Less work has investigated the consequences of ADHD at the societal level.

The economic impact of physical disease (e.g., for coronary heart disease; Weinstein et al., 1987) and mental health disorder (Chiles, Lambert, & Hatch, 2002) has long been used to indicate an identified illness's cumulative effect upon society. To date, very few studies have monetized the societal impact of ADHD. Although some work has examined medical costs of ADHD, such as health care system and medication utilization (Birnbaum et al., 2005; Hakkaart-van Roijen et al., 2007; Kelleher, Childs, & Harman, 2001), little research has monetized the societal consequences of ADHD-related impairments. Using existing data on health care and mental-health care utilization (e.g. inpatient care, outpatient care, office visits), medication utilization, education costs, juvenile delinquency costs, and work-loss costs, Pelham, Foster, and Robb (2007) estimated the annual cost of ADHD to society at approximately \$14,500 per child (\$42.5 billion total). Additional studies have measured and monetized the impact of ADHD in very specific sectors: annual special education service utilization [\$5435 (1995 dollars); Forness & Kavale, 2002], annual utilization of public services in adolescence [i.e., inpatient mental health  $\approx$  \$1300, juvenile justice system  $\approx$  \$200, outpatient mental health  $\approx$  \$500, and special education  $\approx$  \$3000 (2000 dollars); Jones & Foster, 2009], loss of employee productivity ( $\approx$  \$4,000; Hakkaart-van Roijen et al., 2007; Kessler, Lane, Stang, & Van Brunt, 2009; Kleinman, Durkin, Melkonian, & Markosyan, 2009).

When monetizing the costs associated with ADHD, one domain of impact that deserves detailed attention is the education system. Children and adolescents with ADHD commonly experience their most salient and severe impairments in the academic setting (DuPaul & Stoner, 2003; Loe & Feldman, 2007; Robin, 1998). Observations of children with ADHD in classroom settings have documented that as compared to classmates, they are more frequently off-task, complete fewer assignments, possess poorer work accuracy, interfere more with classmates' work, violate more classroom rules, and are less likely to comply with adult requests and demands (Atkins, Pelham, & Licht, 1985, 1989). These behaviors contribute to greater utilization of special educational services by children with ADHD (Forness & Kavale, 2002), lower levels of academic achievement (Swanson et al., 2000), and higher rates of disciplinary referrals, retention, and later dropout (e.g., DuPaul & Stoner, 2003; Kent et al., in press; Mannuzza & Klein, 1999). As a result, students with ADHD are a substantial source of stress for their teachers, principals, and classmates (Greene, Beszterczey, Katzenstein, Park, & Goring, 2002).

Monetary estimates of special education utilization by youth with ADHD are available (Forness & Kavale, 2002; Jones, Foster, & CPPRG 2009); however, these estimates are limited, and must be expanded to determine a more accurate estimate of the educational costs associated with ADHD. Forness and Kavale (2002) estimated the cost of special education attributable to ADHD at \$3.2 billion annually (1995 dollars), or approximately \$3500 in excess costs per child with ADHD. The authors noted that their figure was likely underestimated as they did not have data on more restrictive settings or on children with ADHD in regular classroom settings (e.g., accommodations in 504 plans or disciplinary actions). Jones and colleagues (2009) examined educational service utilization in adolescence [i.e., parental report of special education utilization, participation in school counseling, and retention over a four-year period (ages 12-15)]. The authors estimated incremental education costs at approximately \$3400 per ADHD child annually and ADHD

youth with comorbid Conduct Disorder accounted for a significantly higher cost—approximately \$4000 per child annually. Jones and colleagues utilized data from the Fast Track sample, which over-sampled high risk children. As a result, their estimate for the incremental cost of ADHD was likely an underestimate, as the comparison group displayed above-average levels of problem behavior. Also, no index of disciplinary action was assessed and data were only collected from the secondary school years.

The present study aims to provide a more comprehensive estimate of the educational costs associated with ADHD by examining data from a prospective longitudinal study of individuals diagnosed with ADHD in childhood and a demographically similar comparison group on non-ADHD individuals. Specifically, these analyses will expand upon previous studies by including: 1) data from more restrictive settings, such as alternative school placement, 2) costs associated with disciplinary infractions in general and special education classrooms, 3) data from the entire educational history, including the secondary school years, and 4) a well-diagnosed clinical sample of children with ADHD and a demographically similar comparison group. This estimate will be derived by calculating costs associated with special education use (LD and ED categories), approved private schooling, grade retention, and disciplinary needs, using a Cost-of-Illness framework (Kenkel, 1994; Kenkel, Berger, & Blomquist, 1994; see Methods). It is hypothesized that students diagnosed with ADHD will have higher use of special education services of all types, will display higher rates of grade retention, and will receive more disciplinary actions, thereby incurring higher overall COI than the comparison group.

## Method

### Participants

**ADHD group**—The ADHD group was recruited from a pool of 516 study-eligible participants diagnosed with DSM-III-R or DSM-IV ADHD in childhood and treated in the Summer Treatment Program (STP) of the Attention Deficit Disorder clinic at the Western Psychiatric Institute and Clinic (WPIC) in Pittsburgh, PA from 1987 to 1996. Of the 516, 493 were re-contacted an average of 8.35 years later ( $SD = 2.79$ ) to participate in annual interviews of the Pittsburgh ADHD Longitudinal Study (PALS). Of those contacted, 364 (70.5 %) enrolled in the PALS. At the first follow-up interview, the ADHD group ranged in age from 11 to 28 with 99% falling between 11 and 25 years of age. They were admitted to the follow-up study on a rolling basis between the years 1999-2003 and completed their first follow-up interview immediately upon enrollment. Participants in the follow-up study were compared with the eligible individuals who did not enroll on demographic (i.e., age at first treatment, race, parental education level, and marital status) and diagnostic (i.e., parent and teacher ratings of ADHD and related symptomatology) variables collected at baseline. Only one of 14 comparisons was statistically significant at the  $p < .05$  significance level. Participants had a slightly lower average CD symptom rating on a four point scale as indicated by a composite of parent and teacher ratings (participants  $M = 0.43$ , non-participants  $M = 0.53$ ).

**Comparison Group**—Comparison participants were 240 individuals without ADHD. Comparison participants were recruited for the PALS from the greater Pittsburgh community between 1999 and 2001. These individuals were recruited from several sources including pediatric practices in Allegheny County (40.8%), advertisements in local newspapers (27.5%), local universities and colleges (20.8%), and other methods (10.9%) such as Pittsburgh Public Schools and word of mouth. Comparison recruitment lagged three months behind the ADHD group enrollment in order to facilitate efforts to obtain demographic similarity (discussed below). A telephone screening interview was administered to parents of potential comparison participants to gather basic demographic characteristics, history of diagnosis or treatment for ADHD and other behavior problems, presence of exclusionary criteria as previously listed for the ADHD group, and a checklist of ADHD symptoms. Young adults in the comparison group (age 18+) also provided self-report of ADHD symptoms. ADHD symptoms were counted as present if reported by either the parent or the young adult. Participants who met DSM-III-R criteria for ADHD, either currently or historically, were immediately excluded from PALS consideration. If a potential comparison participant passed the initial phone screen, senior research staff members met to determine whether he/she was demographically appropriate for the study. Each potential comparison participant was examined on four demographic characteristics: 1) age, 2) gender, 3) race, and 4) parent education level. A comparison participant was deemed study-eligible if his/her enrollment increased the comparison group's demographic similarity to the participants diagnosed with ADHD. At the end of the recruitment process, the two groups were equivalent on the four demographic variables noted above.

### Childhood Assessment

As noted above, participants in the ADHD group attended the STP at WPIC during childhood. Mean age for participants at childhood diagnostic evaluation was 9.40,  $SD = 2.27$ , and ranged from 5.00 to 16.92 years with 90% between 5 and 12. At the time of the STP, children with ADHD underwent a diagnostic assessment including parent and teacher Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R and DSM-IV; American Psychiatric Association, 1987, 1994) symptom rating scales (DBD; Pelham, Evans, Gnagy, & Greenslade, 1992) and a semi-structured diagnostic interview administered to parents by a Ph.D. level clinician. The interview consisted of the DSM-III-R or DSM-IV descriptors for ADHD, ODD, and CD with supplemental probe questions regarding situational and severity factors. It also included queries about other comorbidities to determine whether additional assessment was needed (instrument available at <http://ccf.fiu.edu>). Following DSM guidelines, diagnoses of ADHD, ODD, and CD were made if a sufficient number of symptoms were endorsed (considering information from parents and teachers). Two Ph.D. level clinicians independently reviewed all ratings and interviews to confirm DSM diagnoses and when disagreement occurred, a third clinician reviewed the file and the majority decision was used.

### Procedure for PALS Interviews

PALS interviews were conducted yearly beginning with the year of enrollment. Post-baccalaureate research staff conducted interviews. Informed consent was obtained, and all participants were assured confidentiality except in cases of impending danger or harm to self

or others. In cases where distance prevented participant travel to WPIC, information was collected through a combination of mailed and telephone correspondence; home visits were offered as needed. Self-report questionnaires were completed either with pencil and paper or computerized web-based versions. Confidentiality of information was supported with a Certificate of Confidentiality from the Department of Health and Human Services with certain exceptions (e.g., suicidality, child abuse), and the protocol was approved by the University of Pittsburgh Institutional Review Board. The current study utilizes longitudinal data from the first eight annual follow-up visits (gathered from 1999-2008), at which point all participants had completed high school.

## Measures

The Education History Questionnaire was developed by adapting measures used in the PAARC (Pittsburgh Adolescent Alcohol Research Center) and CEDAR (Center for Education and Drug Abuse Research) studies and was used to gather educational information in the PALS. The Education History Questionnaire is a retrospective report from parents (supplemented by a self-report from probands if parents were not available) regarding educational history from kindergarten through college-level education. For each year, respondents indicated the school(s) that probands attended, their placement (e.g., special education versus regular classroom), whether probands were retained, whether they received additional services, and estimates of how many disciplinary referrals the probands had received. This measure was given during the initial follow-up assessment and updated at every subsequent follow-up visit, thereby ensuring that the most recent educational information has been gathered.

## Framing the Cost of Illness Analysis

The societal perspective is recognized as the gold standard perspective for an economic analysis (Gold, Russell, Siegel, & Weinstein, 1996; Siegel, Weinstein, Russell, & Gold, 1996), as it takes into account the total effect of a disorder on all members of a society. This perspective can also be complemented by other perspectives (such as the familial, institutional, or individual), which identify who will be responsible for the costs of a program or service. The COI application in this report discusses three perspectives: 1) the ADHD individual, 2) other members within the setting affected by the ADHD individual (e.g., classmates), and 3) the education system. Additionally, a COI study involves the specification of a time frame. In this analysis, the educational lifetime of the individual is used (Kindergarten through 12<sup>th</sup> grade). Finally, specification of the types of cost included in the analysis is essential to define the nature and scope of the cost-analysis. COI analyses require both an outcome that creates the costs (e.g., number of special education placements) and a per-unit cost of that behavior or outcome (e.g., per-pupil expenditure for special education services).

The first outcome of our analyses is educational placement. Many ADHD children are eligible for special education services under the Individuals with Disabilities Education Act (IDEA) and receive related services at a rate higher than children without ADHD (Forness & Kavale, 2002). The most typical category placement for students with ADHD are within the Learning Disability (LD) category, the Emotional Disturbance (ED) category, and the

Other Health Impaired (OHI) category; prevalence rates of ADHD within these categories being 26%, 43%, and 40% respectively (Forness & Kavale, 2002). The second outcome involved in our analysis is grade retention. Numerous studies have shown that students with ADHD are more likely to repeat a grade than peers (Barkley et al., 2006; Barkley, Murphy, & Fischer, 2007; Barbaresi et al., 2007; Biederman et al., 1998; Faraone et al., 1993; Molina et al., 2009). However, the economic impact of this variable has not been examined in an ADHD sample. The final outcome of our analysis is disciplinary acts committed by ADHD students. The majority of these incidents occur while the student is in a classroom and it is likely that every classroom in the U.S. includes at least one child with ADHD. Thus, the COI framework involves both the teacher's involvement with the disciplinary incident and the incident's impact on classmates. For disciplinary acts that involve school staff beyond the teacher (e.g., principal and guidance counselor office visits, suspensions, expulsions), costs increase accordingly.

**Cost of Special Education Utilization**—Monetary costs associated with the utilization of special education were derived from the United States Department of Education, Special Education Expenditure Project (Chambers, Shkolnik, & Perez, 2003). In our sample, type of special education [specific learning disability (SLD) vs. serious emotion disturbance, (SED)] was differentiated. In 2003 dollars, average per student cost was reported to be \$10,558 for SLD placement and \$14,177 for SED placement. These estimates were converted to 2010 dollars (SLD= \$12,549; SED=\$16,815) using the Bureau of Labor Statistic's Consumer Price Index. Cost for approved private schooling (educational day-treatment) was taken from the same report (Chambers et al., 2003) and was reported to be \$25,580 (2003 dollars). This estimated was also converted to 2010 dollars (\$30,406).

**Cost of Grade Retention**—In order to provide the most accurate estimate of the cost of grade retention, educational placement (i.e., regular, SLD, SED, approved private placement) was considered during the year in which the student was held back. The costs of education noted above (Chambers et al., 2003) and the cost of regular education (\$6,556 in 2003 dollars; converted to 2010 dollars = \$7,793) were used to monetize the cost of spending an additional year in the public education system.

**Cost of Discipline**—Disciplinary incidents were defined as the summed frequencies of times sent to the principal's or guidance counselor's office, verbal warnings, written warnings, and/or detentions. Suspensions and expulsions were examined separately, as the costs associated with these incidents are estimated to be higher. Methodology for establishing cost of discipline was derived from two sources. Estimates of administrator time spent on discipline were derived from Scott and Barrett (2004) report. These authors examined school discipline records, and estimated that the average office disciplinary referral process translated into 10 minutes of administrator time, while the average suspension translated into 45 minutes of administrator time. Using direct observation procedures, Scime and colleagues (2008, February) calculated that teachers spent an average 17 minutes on each classroom disciplinary incidents, while the target student spends an average of 60 minutes engaged in the process of each disciplinary action. Furthermore, one could reasonably presume that time spent by a teacher handling an insubordinate student is

time that is not being spent on curriculum instruction, and is therefore wasted time to the other students in a classroom. Thus, the 17 minutes spent by the teacher is extrapolated to the other children in the classroom using an average class size of 21 (Fabiano et al., 2001, April). Cost of discipline was then monetized by using average cost of employment and average costs to educate a non-special education student, using national labor statistics on teacher and principal salaries (See Table 3).

## Results

For all analyses, one-way ANOVAs were conducted to compare the ADHD group and the comparison group on means and/or costs.

### Cost of Special Education Utilization

Years spent in SLD placement, SED placement, and approved private placement were summed and youth with ADHD ( $M= 3.68, SD=4.29$ ) received special education services for significantly more years than children without ADHD [ $M= .21; SD= 1.32, F(1,601)=147.51, p<.001, d=1.01$ ]. Frequency and proportion rates are presented in Table 2. The incurred cost for youth with ADHD and comparison youth were calculated by multiplying previously presented cost estimates for type of special education and years in approved private schooling and summing across years of schooling (Kindergarten through grade 12). As such, average cost of special placement per year was significantly higher for the ADHD group ( $M=\$4,181, SD=\$5,009$ ) than for comparison [ $M=\$211, SD=\$1,294, F(1,592)=143.57, p<.001, d=.94$ ].

### Cost of Grade Retention

Over the course of their educational careers, youth with ADHD ( $M= .40, SD= .70$ ) repeated a grade at a significantly higher rate than the comparison group, [ $M= .08, SD=.33, F(1,582)=43.98, p<.001, d=.97$ ]. Consequently, youth with ADHD ( $M=\$222, SD=\$429$ ) incurred significantly more cost per year owing to grade retention than the comparison group [ $M=\$43, SD=\$186, F(1,601)=37.01, p<.001, d=.51$ ].

### Cost of Discipline

Youth with ADHD had significantly more reported acts of misbehavior that resulted in disciplinary action than the comparison group (see Table 4 & 5). Additionally, youth with ADHD, as compared to the comparison group, had significantly more disciplinary infractions that resulted in in- or out- of school suspensions or expulsion (see Table 5). Across stakeholders, youth with ADHD incurred significantly higher cost for acts of discipline, suspensions, and expulsions than the comparison group (see Table 5). These costs were then summed to compute a single disciplinary cost. On average, youth with ADHD incurred an annual cost to the education system of \$604 ( $SD=\$1,132$ ) owing to disciplinary incidents. This figure was \$63 ( $SD=\$126.58$ ) in the comparison group.

## Discussion

Our study represents the first attempt to compute lifetime educational costs for a well-diagnosed clinical sample of children with ADHD followed through the entirety of their school years in comparison to a demographically similar non-ADHD group. Our results showed that: 1) students with ADHD had very poor school outcomes with respect to special educational services, grade retention, and school discipline and 2) these outcomes directly translated into a higher monetary cost of education as compared to comparison individuals.

Our findings are consistent with existing literature, which documents impaired school and scholastic functioning in youth with ADHD (Barkley et al., 2006; Biederman, Faraone, Milberger, & Guite, 1996; Hinshaw, 1992; Kent et al., in press; Molina et al., 2009). However, we expand upon this literature by producing a monetary estimate of the impact of these impairments. As previously noted, the existing literature on the educational cost associated with ADHD suggests incremental costs associated with special education placement (Forness & Kavale, 2002; Jones et al., 2009). Our study builds upon estimates of educational costs by examining students' entire educational history of special education expenditures, grade retention, and disciplinary incidents as compared to a comparison group.

Aggregating costs associated with special education placement (\$4181), grade retention (\$222), and disciplinary incidents (\$604), we arrive upon an annual estimate of \$5,007 in incremental costs to the education system. This estimate is consistent with previous work suggesting that the education system is the public sector that bears the greatest societal cost of ADHD (Pelham et al., 2007). This cost does not include annual funds typically apportioned for regular education (\$7,793 per year; Chambers et al., 2003) and is significantly higher than the corresponding estimate in the comparison group (\$318). Assuming a conservative prevalence rate of 5% for ADHD in childhood and adolescence, and extrapolating these results to the U.S. population between the ages of 5-18 (U.S. Census Bureau, 2009), the estimated annual costs associated with ADHD total \$13.4 billion to the U.S. Education System. Thus, the incremental lifetime cost of educating the population of children with ADHD is approximately \$174 billion over 13 years of education. This estimate is nearly 50% higher than that reported from the Fast Track study sample, and 5 to 7 times greater than Forness and Kavale's (2002) estimates.

One must note that an economic analysis does not result in a static monetary figure (Foster, Dodge, & Jones, 2003) as variability in analytical assumptions influences overall estimates. A notable example of this tenet emerges in our study. The oldest participants in the PALS began their schooling in 1980, but ADHD students became eligible for special education services under the OHI categorization during the 1992 school year (Forness & Kavale, 2002). Forness and Kavale estimated a 68% increase in the number of children with ADHD utilizing special education services following the introduction of this regulation. In the present study, data collected on special education categorization was limited to either LD or SED, even for years after the 1992 legislation. Thus, though higher than previous estimates, our estimate of special education costs may be low by modern standards. Furthermore, in our study, as well as the Fast Track study (Jones et al., 2009), the sample received treatment.



It is also possible that receiving treatment for ADHD reduces the economic impact of an individual with this disorder.

As with other educational handicaps such as physical and developmental disabilities, the cost estimates presented in our analyses are substantial. However, they likely represent only a subset of the true cost of ADHD within the educational domain. For instance, the impact of long-term failure on children's outcomes, such as vocational earnings or college entrance, was not assessed. The analyses also did not include costs of educational testing, committee hearings (e.g., for IEP contracts), tutoring, or time for parent-teacher conferencing. Further, our estimates did not assess the costs of Section 504 plan accommodations. If every ADHD child in a regular classroom received a 504 plan, the incremental administrative costs and teacher time associated with implementation would also dramatically increase the estimated total incremental costs. Unfortunately, we are not aware of any data regarding the prevalence of 504 utilization by students with ADHD.

There are several limitations to our study. First, it is possible that comorbid conditions contributed to problems that qualified participants for special education placement. In addition, this study reported on a predominately middle-class sample from one locality—Pittsburgh, PA (see Table 1). Similar studies are needed with samples possessing greater geographic and demographic diversity. It is also probable that referral practices to special education, response to disciplinary infractions, and resource availability vary as a function of locality- rural v. suburban v. urban setting- and replication of educational costs will be needed. Educational data obtained in this study were a combination of retrospective and prospective report. Thus, another limitation to this study is the utilization of retrospective data. Further, the relative proportion of educational services provided for girls as compared to boys with ADHD is unknown; however, one could speculate that because girls with ADHD are under-diagnosed, they are likely under-recognized within the educational domain as well. If this is the case, then their educational costs would be deflated. Given that approximately 10% of our sample is female, we may have underestimated educational cost within this subset of the ADHD population. Unfortunately, our subsample of girls was too small to analyze independently. Replication of this work is needed with emphasis on additional educational outcomes.

Despite its limitations, the present study offers clear evidence that students with ADHD incur a substantial cost the U.S. Education System. Future research should assess the influence of prevention efforts upon the educational costs of ADHD, as special education placement is likely a result of academic underachievement and disciplinary incidents are likely a result of treatable behavior problems. Implementing preventive disciplinary strategies and proactive academic supports may prove fruitful in offsetting high cost services such as special education and/or intensive disciplinary infractions (e.g. suspension). Furthermore, there is evidence that stimulant medication, behavior therapy, and their combination yield long-term cost-benefit in treating ADHD (Foster et al., 2007; Jensen et al., 2005). It is our hope that over the next decades, greater attention to prevention and intervention will lead to decreases in the incremental costs of educating a youth with ADHD.

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**Table 1**  
**Characteristics of the Sample at First Follow-up Visit**

	Comparison	ADHD
<b>N</b>	<b>240</b>	<b>364</b>
<u>Demographic Variables</u>		
Age (M, SD)	17.17 (3.16)	17.75 (3.39)
Gender (% Female)	11.3 (.32)	10.4 (.31)
Racial Minority (%)	15.4	18.4
African-American (%)	9.2	11.0
Other (%)	6.2	7.4
Highest Parent Education <sup>a</sup> (M, SD)	7.41 (1.65)	7.14 (1.62)
High School Grad or GED (%)	8.1	9.1
Part College or Specialized Training (%)	30.2	39.8
College or University Grad (%)	27.2	26.0
Graduate Professional Training (%)	34.5	25.1
% Single Parent Household	23.6	33.2
Age at Assessment in Childhood (M, SD)	NA	9.4 (2.27)
Follow-Up Interval (M, SD)	NA	8.35 (2.79)

Note.

<sup>a</sup>Response scale for parent education ranged from 1 (<7<sup>th</sup> grade education) to 9 (graduate professional training). 4=high school graduate or GED; 5= specialized training; 6=Partial College; 7+ Associate's or 2-year degree; 8= standard college or university graduation. Ns ranged from 229 to 240 and from 328 to 364 for Comparison and ADHD respectively. (Ns for parental income are 203 for Comparison and 291 for ADHD due to subjects' willingness to provide salary information.)

**Table 2**  
**Years in Special Education or Approved Private Placement**

<b>Years</b>	<b>N ADHD</b>	<b>% ADHD</b>	<b>N Comparison</b>	<b>% Comparison</b>
<u>Special Education- Learning Disabled</u>				
0	169	47.6%	232	97.1%
1-3	64	18.0%	1	.4%
4-6	43	12.2%	2	.8%
7+	79	22.2%	4	1.7%
<u>Special Education- Emotional Disturbance</u>				
0	324	91.3%	236	98.7%
1-3	20	5.6%	3	1.3%
4-6	5	1.5%	0	0.0%
7+	6	1.7%	0	0.0%
<u>Approved Private Placement</u>				
0	325	91.6%	239	100.0%
1-3	15	4.2%	0	0.0%
4-6	12	3.3%	0	0.0%
7+	3	0.9%	0	0.0%

**Table 3**  
**Estimated Cost of a School Disciplinary Act**

	<b>Involvement per Disciplinary Act</b>	<b>Involvement per Suspension/Expulsion</b>	<b>Incurred Cost</b>
Administrators	10 minutes	45 minutes	\$0.78 per minute
Guidance Staff	10 minutes	---	\$0.65 per minute
Teachers	17 minutes	17 minutes	\$0.57 per minute
Target Student	60 minutes	360 minutes	\$0.12-\$0.46 per minute
Classmates	17 minutes	---	\$0.12-\$0.46 per minute

*Note.* Cost per minute was extrapolated from annual salaries for school personnel as reported by the U.S. BLS (2010) and the annual per student cost of education as reported by SEEP (2004): Administrators = \$83,880; Guidance Staff = \$57,800; Teachers = \$50,500; Student = \$7,793 (regular education) - \$30,406 (approved private placement).

**Table 4**  
**Frequency of Disciplinary Incidents across Grades K-12**

	<b>ADHD</b>	<b>Comparison</b>
At least once a week	5.8%	0.0%
At least once a month	29.6%	2.5%
At least once a quarter	45.5%	7.9%
Less than once a quarter	19.1%	89.6%



**Table 5**  
**Annual Costs of Disciplinary Acts, Suspensions, and Expulsions per Student**

	<b>ADHD Mean (SD)</b>	<b>Comparison Mean (SD)</b>	<b>Cohen's d</b>
Number of Disciplinary Acts	8.50(15.80)	.99(2.02)*	.62
Number of Suspensions/Expulsions	.97 (2.05)	.10(.30)*	.55
Cost to Administrators	\$108.75 (312.57)	\$8.83 (20.12)*	.42
Cost to Guidance Staff	\$6.52(14.84)	\$0.84(3.91)*	.49
Cost to Teachers	\$42.65(92.12)	\$3.38(10.59)*	.55
Cost to Target Student	\$73.02 (135.95)	\$7.09(18.18)*	.63
Cost to Classmates <sup>a</sup>	\$380.74(674.91)	\$43.29(87.17)*	.65

Note.  $p < .01$  for all comparisons.

<sup>a</sup>Cost estimated at 21 students (Fabiano et al., 2001, April) for a class in a regular education setting (\$0.12/minute).