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Correlates for academic performance and school functioning among youths with and without persistent attention-deficit/hyperactivity disorder☆

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ABSTRACT

Childhood attention-deficit hyperactivity disorder (ADHD) is associated with academic underachievement and school dysfunction. Little is known whether such association varies with the persistence of ADHD symptoms. The authors investigated school functioning among youths with and without persistent ADHD and identified the clinical correlates for school functioning in a large sample of 333 youths with persistent ADHD, 166 with non-persistent ADHD, and 266 without ADHD. The participants and their mothers received structured interviews for diagnosis of ADHD and other psychiatric conditions according to the DSM-IV diagnostic criteria by using the Kiddie epidemiologic version of the Schedule for Affective Disorders and Schizophrenia, and for school functioning by using the Chinese Social Adjustment Inventory for Children and Adolescents. The results showed that both ADHD groups had more impairment in all domains of school functioning than youths without ADHD with a gradient relationship in the order of persistent ADHD, non-persistent ADHD, and non-ADHD. The most consistent correlates for all domains of impaired school functioning were youth- and mother-reported inattention symptoms and increased age. Childhood hyperactivity–impulsivity symptoms also predicted more severe problems in social interactions and school behaviors. Psychiatric comorbid conditions also predicted poorer attitudes toward school works and interactions at school. Our findings indicate that lifetime diagnosis of ADHD, regardless of persistence of ADHD, associate with the impairment of overall school functioning sustaining from childhood into adolescence, and imply that early intervention of childhood inattention may offset school dysfunction at late childhood and adolescence.

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Abbreviations: K-SADS-E, Kiddie epidemiologic version of the Schedule for Affective Disorders and Schizophrenia; SAICA, Social Adjustment Inventory for Children and Adolescents.

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1. Introduction

Attention deficit hyperactivity disorder (ADHD), a common neuropsychiatric disorder in childhood, is associated with impaired school functioning in both clinic- and community-based populations (Barbaresi, Katusic, Colligan, Weaver, & Jacobsen, 2007; Fischer, Barkley, Edelbrock, & Smallish, 1990). Childhood ADHD symptoms are associated with disturbance in multiple domains of school life, including poorer academic grades, fewer educational years, social dysfunction, and delinquent behaviors, continuing from childhood, adolescence, into young adulthood (Barbaresi et al., 2007; Barkley, Fischer, Smallish, & Fletcher, 2006; McGee, Prior, Willams, Smart, & Sanson, 2002). A recent systemic review of 16 prospective studies examining the correlations between childhood attention problems and later academic achievement summarized that early attention problems associate with poorer performance on achievement test, lower grade point average (GPA), more need for special education, more school drop out rate, and less likelihood to enter college (Polderman, Boomsma, Bartels, Verhulst, & Huizink, 2010). After controlling for confounding factors, inattention, but not hyperactivity, was significantly associated with academic impairments, among two of the reviewed studies (Lee & Hinshaw, 2006; Massetti et al., 2008). However, notable methodological concerns were raised in many of these studies, with major bias in not reporting attrition condition, lack of multiple raters in assessing attention problems and achievement, not including covariates such as intelligence, socioeconomic status, comorbidity, and medication history comprehensively.

As youngsters enter adolescence, there are evolutionary changes in ADHD core symptoms, demonstrated as decline in hyperactivity, quality change in impulsivity, and persistence of inattention (Gau et al., 2010a). Also, youths encounter challenges in developmental tasks (such as autonomy, independence, and self identity) as well as environmental changes (less parental guidance, complex social relationship, media and internet exposure, etc.). In order to understand how youths with ADHD adapt at school and how the nature of ADHD is related to their adjustment, delicate considerations are raised in three aspects. First, what is the actual status of childhood ADHD diagnosis at adolescence? Second, how is the clinical status correlated with adolescent school functioning? Third, what is the relative impact of each core ADHD symptom on functioning? To the best of our knowledge, previous studies mainly investigated the predictions of childhood ADHD diagnosis or symptoms to later functioning (Barbaresi et al., 2007; Barkley et al., 2006). Few have reassessed the ADHD symptomatology and its relationship with outcome measures at the time of follow up, such as in adolescence (Lee, Lahey, Owens, & Hinshaw, 2008). A group of studies focusing on current ADHD symptoms and school functioning mostly recruit self-reports from college students. The results are in concordance that, higher current ADHD symptoms are correlated with lower levels of career academic adjustment, study skills, GPA, and decision-making self-efficacy (Norwalk, Norvilitis, & Maclean, 2009; Rabiner, Anastopoulos, Costello, Hoyle, & Swartzwelder, 2008). However, the lack of multiple informants and formal assessment of psychopathology raises concerns about the validity of report. Further, there is lack of exact information about participants' actual childhood diagnosis, family background, and baseline characteristics. Thus, the results provide correlational relationship between cross-sectional ADHD symptoms and adjustment in young adulthood. But there are inadequate clues to map the developmental trajectory of functioning and adaptation among children with ADHD, especially during the adolescent period.

Literatures about school outcomes of ADHD children are mostly limited to western populations. However, there are West-East cultural differences in the nourishment of youth achievement, with diversity in parenting styles, family values, and the youth's belief (Chen & Lan, 1998; Steinberg, Dornbusch, & Brown, 1992). Asian countries valued structure, perfection, diligence, and scholastic achievement much (Castro & Rice, 2003). It is commonly believed that to be outstanding in one's academic performance prepares one best for a successful career. Youth perceive such expectation from their family elders and past it from generation to generation (Chen & Lan, 1998). These cultural beliefs give rise to a stringent educational setting for decades (Gau & Soong, 1995). For example, in Taiwan, the average school hours are at least eight hours per day for secondary school students. Extra three to four hours per day for reviewing study at school or cram school after class are typical in several weekdays in a week. Intensive schedule of exams and review courses held in summer and winter vacation demand both great amount and duration of mental effort to meet the basic requirement of "being a student" in Taiwan. These cultural differences in schooling context should be considered, because there may be less tolerance for youths with ADHD symptoms, and thus resulting in sub-optimal adaptation. To date, there is only one study reporting the school outcome in Chinese ADHD children. Lam and Ho followed up a group of ADHD children who attended the day hospital of child and adolescent psychiatric unit of a local hospital (Lam & Ho, 2010). After a mean of six-year follow-up, 150 subjects (aged 12–16) were reassessed for adolescent psychopathology, psychosocial adjustment, antisocial behaviors, and family environment. Compared to community controls, subjects ranked 20 percentiles lower in major academic subjects and 28% of them repeated a grade, similar to earlier and recent reports from western studies (Barbaresi et al., 2007; Biederman, Faraone, Milberger, Guite, et al., 1996). The subjects also encountered more antisocial problems (7% had been arrested by police, 3% ever used illicit drugs) than controls. It is interesting that the absolute rate of antisocial problems was far lower than that reported in western studies. Though childhood diagnosis of ADHD places detrimental effects on adolescent functioning in a similar trend in this Chinese cohort compared to western populations, the specific impact on various functional domains may be differential. Cultural differences, age of follow-up, and other developmental risks may contribute to the variance. This phenomenon warrants further investigation in assessing functional outcome and identifying significant predictors of functioning in Chinese and also other ethnic populations. Of particular interest, how the persistence and non-persistence of ADHD diagnosis associate with adolescent functioning and the degree of difference is worthy of exploration.