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Validation of DSM-5 age-of-onset criterion of attention deficit/hyperactivity disorder (ADHD) in adults: Comparison of life quality, functional impairment, and family function

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ABSTRACT

The newly published Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) elevates the threshold of the ADHD age-of-onset criterion from 7 to 12 years. This study evaluated the quality of life and functional impairment of adults with ADHD who had symptoms onset by or after 7 years and examined the mediation effect of family function and anxiety/depression symptoms between ADHD diagnosis and quality of life and functional impairment. We assessed 189 adults with ADHD and 153 non-ADHD controls by psychiatric interview and self-administered reports on the Adult ADHD Quality of Life Scale, Weiss Functional Impairment Rating Scale, Family APGAR, and Adult Self Report Inventory-4. The ADHD group was divided into early-onset ADHD (onset <7 years, $n = 147$) and late-onset ADHD (onset between 7 and 12 years, $n = 42$). The mediation analysis was conducted to verify the mediating factors from ADHD to functional impairment and quality of life. The late-onset ADHD had more severe functional impairment at work and poorer family support than early-onset ADHD while they had comparable impairment at other domains. Less perceived family support and current anxiety/depressive symptoms partially mediated the link between ADHD diagnosis and quality of life/functional impairment both in early- and late-onset ADHD. Our data support decreased quality of life and increased functional impairment in adult ADHD, regardless of age of onset, and these adverse outcomes may be mediated by family support and anxiety/depression at adulthood. Our findings also imply that the new DSM-5 ADHD criteria do not over-include individuals without impairment.

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1. Introduction

1.1. Diagnosing adult ADHD

Attention-deficit/hyperactivity disorder (ADHD), previously thought as a child-limited disorder, have been proved to persist into adulthood for up to half of the affected people in many longitudinal studies (Faraone, Biederman, & Mick, 2006b; Weiss, Hechtman, Milroy, & Perlman, 1985). Diagnosing adult ADHD requires retrospective, accurate diagnosis of childhood ADHD, which is problematic for clinicians due to recall bias, influences of comorbidities, and non-specific clinical features of ADHD (Shaffer, 1994). Although some studies supported that the DSM ADHD criteria work considerably well for adults by retrospective diagnosis (Biederman, Faraone, Knee, & Munir, 1990; Murphy & Schachar, 2000), many others doubted the arbitrary decisions of the threshold of symptoms (Faraone et al., 2006b) and the age-of-onset criterion (Barkley & Biederman, 1997). With all renewed efforts, the adult ADHD criteria have been specified in recently released DSM-5 (American Psychiatric Association, 2013), in which the major changes are extending the onset age from 7 to 12 years and lowering the symptom threshold from 6 to 5 at each domain while diagnosing individuals who are 17 years and older.

1.2. The age-of-onset criterion of DSM

Before the publication of the DSM-5, several studies had tried to evaluate the contentious age-of-onset criterion. In a field trial, Kessler et al. (2005b) found that only half of adults with ADHD symptoms recalled their symptoms before 7 and 90% before 12 years. While dividing the onset age into two groups, i.e., by 7 years and after, studies reported no differences between these two age-of-onset groups in family transmission and psychiatric comorbidities (Faraone et al., 2006c), neuropsychological functions (Faraone et al., 2006a), personality traits (Faraone, Kunwar, Adamson, & Biederman, 2009), substance use and related impairment (Faraone et al., 2007) and treatment response (Biederman et al., 2006a; Reinhardt et al., 2007). To test whether extending the maximum age of onset to 12 years old would greatly inflate the prevalence rate of ADHD, Polanczyk et al. (2010) estimated the prevalence rates of ADHD at different ages in a birth cohort, and found that only 0.1% newly identified ADHD occurred between 7 to12 years. Yet in a recent study published after the launch of DSM-5, the authors found a mild increase of the prevalence rate of ADHD from 7.38% (DSM-IV) to 10.84% (DSM-5) (Vande Voort, He, Jameson, & Merikangas, 2014). Despite different results with regard to the prevalence rate, both studies showed no difference in clinical features and functional impairment profiles between children with onset of ADHD symptoms before versus those after age 7. The results for sub-threshold ADHD were less conclusive (Faraone et al., 2006c). Despite decline of ADHD symptoms with age (Biederman, Mick, & Faraone, 2000), many adults with childhood ADHD who no longer meet the symptom threshold of ADHD still suffer from ADHD related impairments (Faraone et al., 2006b, 2000), giving rise to the doubts of the developmental insensitivity of the ADHD criteria used for adults. For this reason, DSM-5 lowers the symptom threshold from 6 to 5 at each domain while diagnosing adult ADHD, causing the skepticism whether the criteria are too lax (Batstra & Frances, 2012).

1.3. ADHD and functional impairment/quality of life

Adults with ADHD usually fail to fulfill their responsibilities, resulting in academic, occupational underachievement (Barkley, Fischer, Smallish, & Fletcher, 2006; Mannuzza, Klein, Bessler, Malloy, & LaPadula, 1993), interpersonal problems, social/emotional difficulties, and other psychiatric comorbidities (Able, Johnston, Adler, & Swindle, 2007; Barkley et al., 2006). The inability of adults with ADHD to fulfilling their social roles in several life domains brings great distress and the subsequent emotional problems might in turn influence their functions. Beside functional impairment, quality of life which reflects the subjective perception of individuals is an important outcome measure in clinic and research settings and the main goal of healthcare (Spitzer et al., 1995). Children and adolescents with ADHD were reported to have poorer quality of life in several domains than non-ADHD controls (Danckaerts et al., 2010), and the Adult ADHD Quality of Life Scale (AAQoL) has been proven to be valid (Brod, Johnston, Able, & Swindle, 2006), responsive to ADHD symptom changes (Matza, Johnston, Faries, Malley, & Brod, 2007), and used in several studies (Adler et al., 2008; Lensing, Zeiner, Sandvik, & Opjordsmoen, 2013). It is of interest whether adults identified with ADHD via DSM-5 have similar severity and patterns of functional impairment in various social roles and influences on quality of life as those identified via DSM-IV that warrant medical attention and resources.

1.4. ADHD and family functions in Chinese culture

Family is a main source of social support and the parenting style, which is undoubtedly important for an individual's development, is quite different between Chinese and western culture (see review by Lim & Lim, 2003). The traditional Chinese family interactions are influenced by the Confucius, which empathizes filial piety and hierarchical relationships. Higher parental control, greater encouragement of independence and more emphasis on the achievement are more often seen in Chinese parents than western parents (Lin & Fu, 1990). These values make ADHD-related disturbing and aggressive behaviors and underachievement even more unacceptable in the Chinese than the western society (Chan & Leong, 1994). Our previous studies found significant correlations between parenting style/family difficulties and youths with ADHD