



## ORIGINAL ARTICLE

# Substance use in young adults with ADHD: Comorbidity and symptoms of inattention and hyperactivity/impulsivity



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### KEYWORDS

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Ex post facto study

**Abstract** Young adults with attention deficit hyperactivity disorder (ADHD) are at high risk of substance use (SU). The aims of the current study were: 1) to examine the use of alcohol, tobacco, marijuana and other illegal drugs by adults with and without ADHD; 2) to compare the oppositional, conduct, anxiety, depression, sleep and antisocial personality symptoms of ADHD adults with SU and ADHD adults without SU; 3) to examine the ability of ADHD symptoms and conduct problems to predict SU. A total of 93 young adults, 43 without ADHD and 50 with a childhood diagnosis of ADHD, who were part of the Spanish sample of the Multicenter ADHD Genetics (IMAGE) study, collaborated in a follow-up evaluation 10.1 years later. ADHD participants were divided into two groups based on the presence or absence of SU. Statistically significant differences were found between young adults with and without ADHD in their use of tobacco, marijuana and alcohol. A statistically significant association was also shown between externalization problems and a greater risk of SU. Conduct problems, to a greater degree than ADHD symptoms, affect SU in ADHD adults.

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**PALABRAS CLAVE**

TDAH;  
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trastorno negativista  
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estudio ex post facto

## Consumo de sustancias en jóvenes adultos con TDAH: comorbilidad y síntomas de inatención e hiperactividad/impulsividad

**Resumen** Los jóvenes con trastorno por déficit de atención con hiperactividad (TDAH) tienen un elevado riesgo de uso de sustancias (US). Los objetivos del presente trabajo fueron: 1) analizar el consumo de alcohol, tabaco, marihuana y otras drogas ilegales en adultos con y sin TDAH; 2) comparar a los adultos con TDAH con y sin US en oposicionismo, problemas de conducta, ansiedad, depresión, sueño y personalidad antisocial; 3) determinar la capacidad de la sintomatología de TDAH y de los problemas de conducta para predecir el US. Noventa y tres jóvenes adultos, 43 sin TDAH y 50 con diagnóstico de TDAH en la infancia que participaron en el estudio *Multicenter ADHD Genetics (IMAGE)* colaboraron en una evaluación de seguimiento 10.1 años después. Los participantes con TDAH se dividieron en dos subgrupos según presencia o ausencia de US. Los jóvenes con y sin TDAH se diferenciaron significativamente en consumo de tabaco, marihuana y alcohol. Se constató una relación significativa entre los trastornos de conducta y US en adultos TDAH. Los problemas de conducta más que los síntomas de TDAH influyen en el US de adultos con TDAH.

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The accumulated research has shown that attention deficit hyperactivity disorder (ADHD) symptoms extend throughout life in up to 60% of the cases (Willcutt, 2012). Their persistence has been associated with functional impairment in psychosocial, educational, professional and family functioning (Biederman, Petty, Woodworth et al., 2012). In addition, compared to adults without ADHD, adults with ADHD experience higher levels of anxiety disorders, mood disorders, conduct disorders and antisocial personality disorder (Hesson & Fowler, 2015; Miranda, Berenguer, Colomer, & Roselló, 2014; Nogueira et al., 2014), as well as an increased risk of abuse/dependence on nicotine, alcohol, marijuana, cocaine, and other unspecified substances (Breyer, Lee, Winters, August, & Realmuto, 2014; van Emmerik-van Oortmerssen et al., 2012). Of the core ADHD symptoms, hyperactivity/impulsivity generally shows more robust and consistent relations with dependence on various illicit substances than inattention which has only been associated with alcohol use (Capusan, Bendtsen, Marteinsdottir, Kuja-Halkola, & Larsson, 2015; Roberts, Peters, Adams, Lynam, & Milich, 2014).

In addition, the strength of the association between substance use (SU) and ADHD varies. Thus, among adolescents with ADHD, about 19%-46% smoke cigarettes, whereas only 10-24% of non-ADHD individuals smoke (Burke, Loeber, White, Stouthamer-Loeber, & Pardini, 2007). Moreover, cigarette smoking is a risk factor for other substance misuse. In fact, adolescents with ADHD are 4 to 5 times more likely than controls to escalate to heavy cigarette and marijuana use after trying these substances once (Biederman, Petty, Hammerness, Batchelder, & Faraone, 2012).

Another interesting issue is the analysis of the influence of other psychopathologies, including comorbid externalizing and internalizing problems, in predicting substance abuse/dependence. Some findings indicate that conduct disorder (CD) and oppositional defiant disorder (ODD) are positively associated with SU in ADHD subjects. Thus,

Symmes et al. (2015) compared nicotine use throughout young adulthood in three groups, based on childhood status: ADHD only, ADHD externalizers and control groups. Results indicated that at all three data collection points, individuals with childhood ADHD plus an externalizing disorder reported higher nicotine use compared to the ADHD group without an externalizing disorder and the comparison group of non-ADHD youth. The group differences were significant, even after controlling for possible confounding variables (age, gender, and current treatment with psychostimulant medication).

Along the same lines, Brinkman, Epstein, Auinger, Tamm and Froehlich (2015) found that adolescents with an ADHD+CD diagnosis had a 3- to 5-fold increase in the likelihood of using tobacco and alcohol, and initiated use at a younger age, compared to those with neither disorder. Having ADHD alone was associated with an increased likelihood of tobacco use, but not alcohol use. Hyperactivity-impulsivity symptom counts were not independently associated with any outcome, while every symptom increase in inattention increased the likelihood of tobacco and alcohol use by 8-10%.

A meta-analysis by Serra-Pinheiro et al. (2013) also concluded that the risk of SU in individuals with ADHD could be explained to a large degree by the frequent presence of ODD and CD. However, some studies have shown a direct link between ADHD and SU, even when CD is controlled (Arias et al., 2008), so that ADHD would be an independent risk factor for substance use disorder, although the ADHD+CD combination would increase the risk.

Less attention has been devoted to research on the contribution of mood or anxiety disorders to substance disorder vulnerability in ADHD. The systematic examination carried out by Wilens and colleagues (2011) concluded that, despite relatively high rates of major depressive (42%-52%) and anxiety (23%-24%) disorders at baseline (ages 6-17), neither of these comorbidities predicted the overall category

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