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## Original article

# The danger of being inattentive – ADHD symptoms and risky sexual behaviour in Russian adolescents

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## ABSTRACT

**Background:** Prior research has indicated that attention-deficit/hyperactivity disorder (ADHD) symptoms may be associated with an increased likelihood of engaging in risky sexual behaviour (RSB). However, research on this association among adolescents has been comparatively limited and mainly confined to North America. The aim of this study was to examine if inattention and hyperactivity/impulsivity symptoms were linked to RSB in a community cohort sample of Russian adolescents.

**Methods:** The study was based on a group of 537 adolescents from Northern Russia. Information on inattention and hyperactivity/impulsivity as well as conduct problems was obtained through teacher ratings, while information on RSB (previous unprotected sex, number of sexual partners, sex while intoxicated and partner pregnancies), substance use, perception of risk, and parenting behaviour was based on students' self-reports. Binary logistic regression analysis was used to examine associations between the variables.

**Results:** Teacher-rated inattention symptoms predicted RSB, independently of co-morbid conduct problems, substance use, risk perception, and different parenting styles (parental warmth, involvement and control). In addition, male sex, binge drinking and a lower assessment of perceived risk were all significantly associated with RSB in an adjusted model. Neither teacher-rated hyperactivity/impulsivity symptoms nor conduct problems were linked to RSB in the full model.

**Conclusions:** Deficits in planning and organizing behaviours, being easily distracted and forgetful seem to be of importance for RSB in Russian adolescents. This highlights the importance of discriminating between different types of ADHD symptoms in adolescence to prevent risk behaviours and their potentially detrimental outcomes on health and well-being.

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## 1. Introduction

Attention-deficit/hyperactivity disorder (ADHD) is a neurobehavioral developmental disorder, characterized by the symptoms of inattention and/or hyperactivity/impulsiveness. The worldwide prevalence of ADHD in children has been estimated at about 5% with a higher prevalence among boys [1]. For many children, ADHD symptoms persist into adulthood with long-term adverse

outcomes such as lower educational attainment and income, and more emotional and social problems [2]. Given that the typical features of ADHD include an inability to inhibit impulses and self-regulate, increased reward and sensation seeking behaviour, as well as poor social skills [3], it is not surprising that the disorder has been linked to a number of risk taking behaviours, such as drug and alcohol use, conduct problems [4,5] and risky sexual behaviour (RSB) [5]. However, although there has been an abundance of studies on the link between ADHD symptoms and other types of risk taking behaviour, research on the association with RSB has been limited. In the scientific literature, RSB commonly refers to unprotected sex, multiple sex partners, and hazardous sexual

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activity such as sex while intoxicated [6] and is regarded as a major public health problem during adolescence [7,8]. The handful of previous studies on the association between ADHD symptoms and RSB have been mostly undertaken among adults [9–12] especially males [9,13]. The research has indicated that ADHD is associated with early sexual debut, multiple sexual partners and more partner pregnancies [9,10,13,14].

Against this backdrop it has been suggested that not only is there a need for more studies on this association in adolescents, but also, for a greater focus to be placed on the dimensional aspects of ADHD, where both symptom clusters – inattention and hyperactivity/impulsivity – are investigated separately [12]. In particular, impulsivity has been proposed as a likely causal pathway to RSB, with a recent review finding a small but significant association between impulsivity and RSB [7]. Comorbid conduct problems might also have a causal role in the emergence of RSB [12]. However, the few studies to date that have included conduct problems as a covariate, have produced conflicting results. Some reports suggest that hyperactivity is associated with early sexual intercourse [9] and that ADHD symptoms are associated with early sexual intercourse, more sexual partners, more casual sex and more partner pregnancies [13] independently of conduct problems. Other research found an association with early sexual intercourse only when hyperactivity/inattention symptoms occurred in combination with conduct problems [15] or even that an early sexual debut and high-risk sexual behaviour is evident only among those young adults with a history of childhood disruptive behaviour, whereas hyperactivity symptoms are unrelated to RSB [11]. In addition, it has been suggested that the association between ADHD and RSB is mediated by conduct problems in combination with substance use [12].

When examining the association between ADHD symptoms and RSB, it might be beneficial to employ a multisystemic framework, since there are several interweaving factors besides conduct problems, associated with adolescent sexual activity, such as those that relate to:

- the adolescent him/herself (e.g. behaviour and attitude);
- the adolescent's family (e.g. the parent–child relationship);
- or that involve extra-familial systems (e.g. peer pressure) [16].

For example, previous research has shown that parenting behaviours, such as parental monitoring, parental support and parent–child communication, are associated with a lowered risk for involvement in high-risk behaviour, including RSB, during adolescence [16,17]. However, very few studies have used a multisystemic approach, when investigating the association between ADHD and RSB.

Despite an increasing number of publications suggesting an association between ADHD symptoms and RSB, to the best of our knowledge, there has been limited research exploring this association outside North America. To address this deficit the current study uses data from Russia. There is reason to believe that Russia might be an especially suitable location for this research. Although there is some evidence that the prevalence of ADHD (hyperkinetic disorder) may be similar in Russian and Western children [18], other evidence suggests that sexual risk behaviour is widespread among young people in Russia. Specifically, in an environment where sex education is not taught regularly or systematically in schools [19], a large number of adolescents are engaging in early sexual activity [20] with alcohol playing an important role in sexual risk behaviour [21]. Indeed, Russia is currently one of the countries with the highest teenage pregnancy and abortion rates in Europe [22]. In such circumstances, determining the role of inattention and hyperactivity/impulsivity in RSB may have important public health consequences.

The current study thus has three main aims:

- to determine whether inattention and hyperactivity/impulsivity symptoms are associated with RSB in Russian adolescents;
- to examine if other factors such as conduct problems, parent–child relations and risk perception are important in this association;
- to investigate if there are sex differences in ADHD symptoms and RSB.

## 2. Methods

### 2.1. Participants and procedure

This study builds on and extends an earlier study that assessed ADHD symptoms and psychopathology in Russian adolescents [23] that was conducted in 2003 in Arkhangelsk, a large city in the Northwestern part of European Russia. In Arkhangelsk, the population's socioeconomic status (SES) is in the low to average range for the whole of Russia. The study participants, 537 adolescent school students (12–17 years of age; mean age 14.37 [SD = 0.96]), were recruited using a two-stage selection process, where school buildings and classes were randomized in order to obtain a representative sample of the adolescent school-age population. Information was collected from both the adolescents and their classroom teachers. The majority of the adolescents were of Slavic origin (Russian = 92.5%, Ukrainian = 1.1%, Byelorussian = 1.9%, other = 4.5%) and 27.1% of them came from single-parent households. In addition, the reported unemployment rates were 14.3% for mothers and 10.5% for fathers, while 15.5% of mothers and 13.6% of fathers were employed part-time. More detailed information regarding the study procedure can be found in Ruchkin et al. [23]. Informed consent was obtained from all participants prior to their inclusion in the study. The study was approved by the institutional review committee at the Northern State Medical University (Arkhangelsk, Russia).

### 2.2. Measures

#### 2.2.1. Outcome variable

Self-rated *Risky sexual behaviour* was assessed with four questions about students' sexual behaviour:

- “How many people have you had sexual intercourse with?”;
- “The last time you had sexual intercourse, had you been drinking alcohol or using drugs?”;
- “The last time you had sex did you or your partner use a condom?”;
- “How many times have you been pregnant or got someone pregnant?”.

As the RSB scores were positively skewed with a large number of students not engaging in any form of RSB, in the analyses that follow the RSB variable was dichotomized so that any student that reported one instance of engaging in at least one RSB, i.e. having more than one sexual partner, using substances during last intercourse, not using a condom during last intercourse and ever being/getting someone pregnant was categorized as having engaged in RSB.

#### 2.2.2. Independent variable

Teacher-rated *inattention and hyperactivity/impulsivity* symptoms were obtained with the modified version of the ADHD Rating Scale-IV, originally developed by DuPaul et al. [24] and

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