



Cannabis—psychosis pathway independent of other types of psychopathology

Robert F. Ferdinand^{a,*}, Jan van der Ende^a, Ilja Bongers^a, Jean-Paul Selten^b,
Anja Huizink^a, Frank C. Verhulst^a

^a Department of Child and Adolescent Psychiatry, Erasmus Medical Center Rotterdam/Sophia Children's Hospital, Dr. Molewaterplein 60, 3015 GJ Rotterdam, The Netherlands

^b Rudolf Magnus Institute of Neuroscience, Department of Psychiatry, University Medical Center Utrecht, The Netherlands

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Abstract

Aims: To investigate if associations between cannabis use and psychotic symptoms occur independently, or occur as a consequence of previous—other types of—psychopathology.

Methods: A 14-year follow-up study of 1580 initially 4- to 16-year-olds who were drawn randomly from the Dutch general population was conducted. At initial assessment, psychopathology was assessed with the Child Behavior Checklist. Across the 14-year follow-up period, cannabis use and psychotic symptoms were assessed with the Composite International Diagnostic Interview (CIDI). Because cannabis use is generally condoned in The Netherlands, false-negative reports of cannabis use may occur less frequently than in countries with stricter drug policies, which supports the value of the present study.

Results: Survival analyses indicated that the association between cannabis use and psychotic symptoms occurred independently of initial CBCL scores.

Conclusions: The link between cannabis use and psychotic symptoms is specific, and does not depend on the earlier presence of other types of psychopathology. This indicates that research aimed at unraveling mechanisms that are responsible for this specific association is useful. Further, given the fact that cannabis use seemed to be a specific risk factor for future psychotic symptoms, prevention aimed against cannabis use may prohibit the onset of psychotic symptoms in vulnerable individuals.

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1. Introduction

The association between cannabis use and psychotic symptoms has gained more and more attention in the past ten years, especially because of the possibility that cannabis might be a risk factor, or even cause

* Corresponding author. Tel.: +31 10 4636671 (int); fax: +31 10 4636803 (int).

E-mail address: r.f.ferdinand@erasmusmc.nl (R.F. Ferdinand).

psychotic symptoms (Degenhardt and Hall, 2001; Farrell et al., 2002; Fowler et al., 1998; Kessler et al., 1997; Regier et al., 1990; Vreugdenhil et al., 2003; Ziedonis and Trudeau, 1997). Some have argued that cannabis is used to self-medicate psychotic symptoms, and evidence is available indeed that cannabis use is often preceded by psychotic symptoms (Ferdinand et al., 2005; Hambrecht and Hafner, 1996). However, in the past ten years, the role of cannabis as a putative causative agent for psychosis has been getting more emphasis (Andreasson et al., 1987; Arseneault et al., 2002, 2004; Caspi et al., 2005; Degenhardt et al., 2003; Henquet et al., 2005a,b; Van Os et al., 2002, 2005; Verdoux et al., 2003; Zammit et al., 2002).

A recent meta-analysis of longitudinal studies that investigated the overall effect size and consistency of the association found a pooled odds ratio of 2.1. This indicated that the probability of future psychosis increased 2.1-fold if cannabis was used (Henquet et al., 2005b). Several longitudinal studies addressed the association between cannabis use and future psychotic symptoms. Van Os et al. (2002) conducted a 3-year follow-up of 4045 psychosis-free subjects and 59 individuals who fulfilled criteria for psychotic disorder, aged 18 to 64 years, from the Dutch general population. They found that baseline cannabis use predicted the future presence of psychotic symptoms. This was confirmed by Henquet et al. (2005a) who studied 2437 German adolescents (average age 18.3 years) from a population based sample, who were followed-up across an interval of 3.5 years. Arseneault et al. (2002) studied younger individuals and found that early onset (before age 15) of cannabis use may even be a stronger risk factor for psychosis than cannabis use in later adolescence. The role of cannabis use during adolescence as a risk factor for future psychotic symptoms was supported further by Ferdinand et al. (2005). Further evidence for the role of cannabis use as a risk factor for psychosis was provided by Zammit et al. (2002). These authors assessed cannabis use in 50,087 Swedish conscripts aged 18 to 20 years in 1970. They followed them up across the period from 1970 to 1996, and found that the risk for schizophrenia was increased (odds ratio=1.9) in those who reported that they had ever used cannabis at initial assessment.

Psychosis may also constitute a risk factor for cannabis use (Ferdinand et al., 2005). Sometimes, it

is hypothesized that individuals with incipient psychosis use substances to self-medicate their symptoms (Hambrecht and Hafner, 1996). Hambrecht and Hafner (1996) investigated 232 first episode schizophrenia patients and found that the first symptom of schizophrenia was more often followed than preceded by use of illicit drugs. Cannabis use was by far the most frequently used drug. This cross-sectional study indicated that psychotic symptoms may place individuals at risk for cannabis use, although unidirectional causality was not supported.

In most publications, psychotic symptoms are hypothesized to cause future cannabis use, or vice versa. The possibility that both are caused by the same underlying vulnerability is often disregarded, although, in representative sample of Dutch adolescents and young adults, Ferdinand et al. (2005) found that cannabis use was not only a risk factor for, but also a consequence of psychotic symptoms. The finding that temporal pathways ran in both directions may indicate the presence of an underlying common vulnerability.

Previous studies that assessed temporal associations between cannabis use and psychotic symptoms did not investigate the possible influence of other types of psychopathology, which might represent a common vulnerability factor. For instance, given the association that has been found between delinquent behaviors, substance use, and psychotic symptoms (e.g. Teplin et al., 2002; Vreugdenhil et al., 2004; Windle and Wiesner, 2004), it can be hypothesized that delinquent behaviors are a risk factor, both for psychotic symptoms and for cannabis use, which might explain the association between psychotic symptoms and cannabis use. If this would indeed be the case, this would have practical consequences. If the relation between psychotic symptoms and cannabis use would, to a large extent, depend on the previous presence of delinquent behaviors, this might call for research and intervention strategies, primarily or at least partly aimed at delinquent behaviors. Conversely, associations independent from delinquent behaviors might warrant research and interventions aimed at specific associations between cannabis use and psychotic symptoms. As for delinquent behaviors, associations with cannabis use and psychotic symptoms have also been found for other types of psychopathology such as anxiety and depression (e.g.

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