

DRUG & ALCOHOL FINDINGS *Research analysis*

This entry is our analysis of a study added to the Effectiveness Bank. The original study was not published by Findings; click [Title](#) to order a copy. Free reprints may be available from the authors – click [prepared e-mail](#). [Links](#) to other documents. [Hover over](#) for notes. [Click to highlight](#) passage referred to. [Unfold extra text](#)  The Summary conveys the findings and views expressed in the study. Below is a commentary from Drug and Alcohol Findings.

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▶ [Can cannabis use be prevented by targeting personality risk in schools? Twenty-four-month outcome of the adventure trial on cannabis use: a cluster-randomized controlled trial.](#)

Mahu I.T., Doucet C., O’Leary-Barrett M. et al.
Addiction: 2015, 110, p. 1625–1633.

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School staff trained to deliver personality-targeted substance use interventions to London high school pupils – effectively delaying cannabis use among a subset (those identified as ‘sensation-seekers’).

SUMMARY Cannabis is the second most popular substance used by teenagers and young adults (alcohol being the first). Given the harmful effects linked to early-onset and chronic cannabis use among adolescents, “programmes that can prevent and delay this behaviour are of utmost importance for the public”.

The dominance of particular personality traits can increase vulnerability to substance use issues, and produce unique motivational profiles among users – prompting interest in interventions designed to develop personality-relevant coping skills.

Much of the evidence linking personality traits to substance use comes from studies of drinking, but there is some showing an association between ‘impulsivity’, ‘negative-thinking’ and ‘sensation-seeking’ and increased probability of cannabis use, with sensation-seeking a specific risk factor for increased use over time. ‘Hopelessness’ is linked to substance use issues more generally.

The Adventure Trial examined the effectiveness of *personality-targeted* interventions for preventing substance use problems among London high school pupils – their impact on cannabis use and frequency of use described here, and effects on reducing drinking reported elsewhere ([1](#) [2](#)).

The present study sought to establish evidence of treatment effectiveness under real-world conditions, with interventions delivered by trained teachers. The Preventure Trial before it established evidence of treatment [efficacy](#) when delivered by mental health professionals. The interventions in the Preventure Trial were associated with a [marginal reduction](#) in the odds of taking up the use of marijuana over a 24-month period among high-risk adolescents.

A total of 21 secondary schools signed up for the study, representing 14% of the 148 schools approached. They were spread across 18 London boroughs and located in both densely populated, low-income areas and suburban areas. All but one school were state-funded. The recruited schools were randomly assigned to deliver the interventions (12) or statutory drug education (9) provided through the regular national curriculum. The latter acted as the [control](#) or comparison condition. One intervention school and one control school were excluded from the trial, because the control school could not commit to the full trial protocol.

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Key points

From summary and commentary

The Adventure Trial tested the impact of personality-relevant coping skills on cannabis use among London high school pupils.

High-risk young people were allocated to receive an intervention matched to their specific vulnerabilities (‘hopelessness’, ‘anxiety-sensitivity’, ‘impulsivity’, or ‘sensation-seeking’).

Cannabis use was effectively delayed only among a subset – those identified as ‘sensation-seekers’.

The interventions were brief and involved two 90-minute group sessions carried out at the participants' schools by trained teachers. High-risk pupils received only one of four interventions targeting their most dominant personality trait, each designed to change how they cope with the specific vulnerabilities associated with their personality risk:

- *Hopelessness*: A tendency to unhappiness, depression and feeling a failure, feelings relieved by intoxication.
- *Anxiety-sensitivity*: Fear of anxiety-related bodily sensations due to beliefs that such sensations will lead to catastrophic outcomes, for which substance use can represent a form of self-medication
- *Impulsivity*: An inability to restrain seeking gratification in the presence of immediate rewards (such as the feelings available through substance use) despite longer term negative consequences.
- *Sensation-seeking*: Desire for intense and novel experiences, which can be expressed as a desire to 'get high' through drugtaking or heavy drinking.

As well as receiving training, teachers were guided by intervention manuals. To enhance motivation for behavioural change, the first sections of the manuals focused on goal-setting. The second sections focused on the target personality trait and their associated problematic coping behaviours. The final parts introduced pupils to the cognitive-behavioural model and guided the breaking down of personal experiences into thoughts, emotions, and behaviours in personality-specific ways. Pupils were instructed to challenge their personality-specific cognitive distortions. Cannabis was not mentioned directly in any intervention manual, but was discussed if the young people raised it in the group sessions.

Pupils identified to take part (2904) were attending school in September 2007, and in the year nine cohort. Initial and follow-up assessments (at six, 12, 18 and 24 months post-intervention) were conducted for 2401 pupils, but only the outcomes of the high-risk young people (referred to as the 'intent-to-treat' sample) (1038) are reported here.

Marijuana use or non-use in the past six months, and frequency of use, was assessed using the Reckless Behavior Questionnaire; and personality was assessed using the Substance Use Risk Personality Scale. Pupils who deviated from the school averages for one or more of the personality traits listed above were considered high-risk, and allocated to the intervention matching their most dominant personality trait.

The average age of pupils was 13.7 years. Over half were male (55.7%), and 41.3% reported white ethnicity.

The researchers and participants knew which group they were assigned to (this is known as an 'open-label trial'), but assignment was masked from young people and teachers who did not participate in the programme, and young people participating in interventions were not informed of other interventions being offered and which of their peers participated in these other interventions. Those conducting follow-up sessions and quality control of data were also blind to intervention status.

Main findings

The data was analysed in two ways – first a method to investigate the impact of the interventions on cannabis use, and second to look at whether any changes were maintained over time or significant over time.

The top-level question was whether personality-targeted interventions were effective in reducing onset and frequency of cannabis use among all high-risk young people. The researchers could not say conclusively that this was the case. Although one type of analysis uncovered significant changes – in terms of lower rates of cannabis use (33%) at the six-month follow-up, and a fall in frequency of use at the 12- and 18-month follow-up – the other could not back this up.

Breaking the findings down into different categories of high-risk young people, the researchers observed that sensation-seeking young people were more vulnerable to cannabis use than other high-risk personality types – specifically, more likely to report cannabis use at six months' post-intervention and throughout the two-year trial. Both types of analysis revealed that interventions designed to manage sensation-seeking personalities were more effective at delaying cannabis onset than other personality-targeted interventions, and when compared to high sensation-seeking young people who did not receive the intervention. The sensation-seeking intervention was associated with a 75% reduction in cannabis use rates at six months' post-intervention, and reduced frequency of use at 12 months.

Further analysis revealed that the study was not sufficiently geared up to detect small effects, for example behaviours with low prevalence. This was particularly the case with one method, able only to detect 30–50% reductions in cannabis use rates at any given time-point.

The authors' conclusions

Schools are promising settings for prevention work, offering contact with large numbers of pupils before drug use begins. The school-based intervention described in this paper built on the work of the Preventure Trial, demonstrating that interventions targeting personality-based vulnerabilities to cannabis use could be successfully delivered by trained school staff – effectively so to a subset of high-risk teenagers ('sensation-seekers').

Due to limitations of the analysis, the authors could not detect whether the personality-targeted interventions were effective in reducing onset and frequency of cannabis use among high-risk young people in general. The only significant finding was among the sensation-seeking subgroup – perhaps to be expected [given that](#) "motives for marijuana use among young people are tied primarily to enjoyment, enhancement and experimentation", fitting the behavioural profile of this high-risk group, and their self-reported drinking motives (1 2).

It is plausible that the other personality-targeted interventions did not target motives relevant to cannabis use in young adolescents. Interventions with more cannabis-relevant information (for example taking certain elements from the sensation-seeking intervention) could achieve stronger effects.

FINDINGS COMMENTARY The featured paper described the cannabis use outcomes of the Adventure Trial – the results pointing towards the feasibility of training teachers to deliver targeted substance use interventions, and the benefits of building personality-relevant coping skills among 'sensation-seeking' young people, but not the effectiveness of personality-targeted interventions for preventing cannabis use problems across all high-risk pupils.

The main feature distinguishing the [Adventure Trial](#) from its precursor, the [Preventure Trial](#), was that ordinary teachers in schools were trained to deliver personality-targeted interventions, rather than mental health professionals. This was done to examine the effectiveness of the interventions under real-world conditions. Although the study found that ordinary teachers could be trained, this was among a highly-selected set of schools – of 148 schools approached, only 21 signed up to the study. Having a limited set of schools (likely those which could create the time and resources to participate, and were motivated to do so) does raise a question about the extent to which the study could be said to have produced generalisable results under real-world conditions.

The study involved an 'intent-to-treat' sample, so all young people incorporated into the study, and allocated to one group or another were included in the analysis. This not only scooped up high-risk pupils who received the interventions but were not available for follow-ups, but also a proportion of pupils (100) who according to the researchers did not receive the interventions "due to time and resource constraints". This likely produced slightly conservative estimates of effectiveness.

The researchers elected to report only on cannabis use in the paper, despite the study protocol stating that the Adventure Trial would investigate "illicit drug use" or "drug use and misuse", as well as alcohol use which has been reported elsewhere (1 2). Cannabis was not singled out in the study protocol, and nor was it mentioned directly in any intervention manual, suggesting that the goal might have originally been to measure the effect of the intervention against general 'drug use', but at some point after the study began/the data was collected, the focus shifted to cannabis use. The explanation the researchers gave was that the trial was designed (and the sample size determined) to detect intervention effects on alcohol, and though their calculations showed that it could also detect [cannabis use](#), it could not be relied on to detect [cocaine use and other drug use](#). This explains why they might not have felt confident reporting on other drug use – though they could have done so with the caveat that any changes were without statistical significance – but not why the decision was made to exclude reporting of drug use as a whole, or to carve up drug use into different categories in the first place.

Cannabis use was assessed with a question that asked about 'marijuana (weed)'. There was no mention of evidence (be it anecdotal or otherwise) that these were appropriate/familiar terms to the young people in London. 'Cannabis' is arguably more commonly used than 'marijuana' in the UK, but [there are many other terms](#) too, some more fitting for the form or strength of cannabis in question, and perhaps for the cultural background of the young people.

A key finding in the featured paper was that the sensation-seeking intervention delayed the onset of cannabis use among sensation-seekers. This finding may not have remained significant had the researchers adjusted the threshold for significance to account for the [multiple outcomes](#) being tested (for example, calculating results for the whole high-risk sample, plus the four personality groups).

In Table 2 of the paper, the figures for sensation seekers in the [control](#) group show onset of cannabis use at 9.7% before the intervention, 24% at the six-month follow-up, 16.3% at 12 months, 32.7% at 18 months, and 29.8% at 24 months. These fluctuations paint a strange picture of adolescent involvement with cannabis over that two-year period, and may not be an accurate reflection of adolescent involvement more widely.

In the intervention group, the prevalence of cannabis use before the intervention and at the six-month follow-up was the same for sensation seekers (12.3%) – this despite an extra 7.4% of young people starting to use cannabis at six months. This suggests an error in the reported data.

A paper reporting the six-month drinking outcomes in the Adventure Trial is also featured in the [Effectiveness Bank](#). Personality-targeted interventions were associated with significantly decreased drinking, lower alcohol consumption overall, and a lower likelihood of drink-related problems. Going into more detail about the role of the teachers, it also showed that they could be trained to deliver personality-targeted interventions at least as satisfactorily as cognitive therapists. In another paper, drinking outcomes (including binge drinking and problem drinking) over a 24-month follow-up period were [examined](#), as well as whether the interventions offered any indirect protection to the broader lower-risk population of pupils (a phenomenon known as the 'herd effect'). Targeted effects [were observed](#) on all drinking outcomes for the duration of the 24-month follow-up period, with high-risk young people in intervention schools reporting 29% reductions in odds of drinking (43% for binge drinking, and 29% for problem drinking), and reductions in long-term drinking and growth of binge drinking among low-risk young people in the same schools, indicating some form of herd effect, possibly via high-risk peers modelling less drinking and less problematic drinking. The [study protocol](#) indeed specified that the effects among low-risk pupils would be traced in the Adventure Trial – “the remaining 55% of low-risk pupils in the grade were also followed to examine population-level effects of the intervention” – but why these results were only reported for alcohol (as above), and not cannabis use, is unclear.

Selective interventions, like those tested in the Preventure and Adventure trials, appeal not only to the sense that they are targeting those most in need (or at-risk), but that they are a smart way of spending limited resources. But, as one well-informed and clear analysis [concluded](#), we may not yet be able to predict future substance use well enough to risk leaving some people out. Data from 940 studies tracking the development of cohorts of young people was used to test the extent to which standard risk and protective factors were related to alcohol, tobacco, and cannabis use. Most of the factors were indeed related to substance use, some fairly strongly, but on average relationships were weak. Some factors were not related to use, and a few were related in the 'wrong' direction. This predictive weakness was fundamental to why the paper advocated for persisting with universal prevention efforts.

In 2013, then Chief Executive of Action on Addiction Nick Barton [praised](#) the package of work led by Dr. Patricia Conrod, saying:

"Dr Conrod's study ... is an exciting development for prevention work in the UK [which ...] is generally recognised as inadequate, and as we see regularly in the media, currently fails to address binge drinking and drug taking among young people. We ... welcome any evidence-based research which may help to reverse this trend."

For further information and contact details, visit the King's College London website to read about the [Adventure Trial](#), and the [Preventure Trial](#).

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