



The impact of youth internalising and externalising symptom severity on the effectiveness of brief personality-targeted interventions for substance misuse: A cluster randomised trial

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HIGHLIGHTS

- Personality-targeted interventions reduce binge drinking in high-risk youth.
- Youth with high (vs. low) externalising symptoms benefitted more from the intervention.
- Personality-targeted interventions may effectively treat dually diagnosed youth.
- The presence of high internalising symptoms didn't moderate intervention effects.

1. Introduction

Adolescent mental health problems are associated with substance misuse, with dually diagnosed patients being the norm, rather the exception. Up to 80% of adolescents with a primary Axis I disorder have co-morbid substance use disorder (SUD) (Deas-Nesmith, Campbell, & Brady, 1998; Garcia-Carretero, Novalbos-Ruiz, Robles-Martinez, Jordan-Quintero, & O'Ferrall-Gonzalez, 2017), with 11–16% of adolescent outpatients diagnosed with a co-occurring SUD (Kramer, Robbins, Phillips, Miller, & Burns, 2003).

The risk of a dual diagnosis is sizeable in youth (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003) and, in addition to representing a challenge for clinicians, has many personal, familial and societal implications. Dual diagnoses are associated with poor treatment outcomes and compliance, more severe psychiatric symptoms, higher relapse rates, suicidal ideation and attempts, and poorer functioning (Baker et al., 2007; Gau, Stice, Rohde, & Seeley, 2012; Grella, Hser, Joshi, & Rounds-Bryant, 2001; King, Gaines, Lambert, Summerfelt, & Bickman, 2000). Treatment programs are under-developed for dual diagnoses (Salvo et al., 2012), as many evidence-based practices do not address the additional impact or interaction of conditions co-occurring with the primary diagnosis.

Several theoretical models have been proposed to explain

comorbidity between disorders. One influential theory is the “common factor” model, whereby comorbid disorders are explained through their relationship to a common underlying variable, such as personality (Castellanos-Ryan & Conrod, 2012; Pihl & Peterson, 1995). Four different personality profiles, Hopelessness, Anxiety-Sensitivity, Impulsivity and Sensation Seeking, play a particularly important role in the onset and development of substance misuse and psychiatric symptoms. Each is associated with different motives for substance use (Woicik, Stewart, Pihl, & Conrod, 2009), drug use profiles (Conrod, Pihl, Stewart, & Dongier, 2000) and patterns of non-addictive psychopathology (Castellanos-Ryan, O'Leary-Barrett, Sully, & Conrod, 2013). These high-risk personality traits are targeted in a brief, selective intervention program named Preventure, which was developed in order to prevent alcohol and drug use problems in adolescence, and has since been validated in five separate randomised controlled trials in Canada, the United Kingdom, The Netherlands and Australia. This cognitive-behavioral intervention has been shown to reduce substance use and related problems up to three years post-intervention (Conrod, Castellanos, & Mackie, 2008; Conrod, Castellanos-Ryan, & Mackie, 2011; Conrod, Castellanos-Ryan, & Strang, 2010; Conrod, Stewart, Comeau, & Maclean, 2006; Conrod et al., 2013; Lammers et al., 2015; Newton et al., 2016).

It remains to be determined if this intervention approach is as

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effective for those who may already experience significant mental health problems prior to intervention delivery. Indeed, some evidence suggests that substance misuse interventions may not be as effective in those participants who have co-occurring mental health problems (Brown, Myers, Mott, & Vik, 1994; Grella et al., 2001). The Preventure program has been shown to concurrently reduce internalising and externalising problems up to two years post-intervention (Castellanos & Conrod, 2006; O'Leary-Barrett et al., 2013). This suggests that, through targeting the underlying personality risk factors, Preventure may simultaneously address the adverse emotional and behavioural consequences of these high-risk traits.

The current study aims to examine the moderating effects of pre-existing mental health symptoms on the effectiveness of Preventure interventions on alcohol outcomes. These results will inform on the potential applicability of this intervention to clinical child and adolescent populations, as well as with individuals with a dual diagnoses, who are currently under-served by treatment programs.

2. Methods

2.1. Participants and procedures

19 secondary schools across 18 London boroughs were recruited to participate in the Adventure cluster-randomised trial, and all grade 9 students were invited to participate ($n = 3021$). The response rate was 87.5% ($n = 2643$). The study selected youth who reported high levels of four personality traits according to the Substance Use Risk Profile Scale (SURPS; Woicik et al., 2009). High-risk status was defined as scoring one standard deviation above the school mean on one of the four subscales of the SURPS. The final study sample consists of 1025 high-risk adolescents (54% male, mean age 13.7 years at baseline, 43% white). This sample represents 84.7% of randomized high-risk participants. The study followed a cluster randomised design in which schools were allocated to intervention or control conditions according to a computerised randomisation procedure. High-risk participants from intervention schools were invited to participate in personality-targeted interventions. These participants were assigned to the personality-targeted intervention for which they showed the most statistical deviance according to z-scores. Please see Fig. 1 (CONSORT diagram) for further information on participant enrolment, allocation and follow-up in the study.

Participants were surveyed during class time using self-report questionnaires at 6-month intervals for 2 years. To maximize the accuracy of self-reports, visual prompts were used to assess quantity of alcohol consumption, a reliability check (sham drug item) was included, and baseline and follow-up assessments were conducted by research, rather than school, staff.

2.2. Ethical considerations

Active assent from students and passive consent from parents for both survey and intervention phases were obtained.

All high-risk students were included in the intent-to-treat analysis regardless of whether or not they received an intervention. Please see Fig. 1 (CONSORT diagram) for more information.

2.3. Measures

2.3.1. Demographics

Adolescents provided gender and ethnicity information using a multiple-choice procedure.

2.3.2. Personality risk

The 23-item SURPS questionnaire (Woicik et al., 2009) was used to assess variation in personality risk for substance abuse and dependence including four different dimensions: Sensation-Seeking, Impulsivity,

Anxiety-Sensitivity and Hopelessness (referred to in adolescents as Negative Thinking). The SURPS has good concurrent, predictive and incremental validity (relative to other personality measures) in differentiating individuals prone to reinforcement-specific patterns of substance-use (Castellanos-Ryan et al., 2013; Conrod, Phil, et al., 2000; Conrod et al., 2008; Krank et al., 2011; Woicik et al., 2009). It is concurrently and prospectively associated with substance misuse and non-substance-related externalising behaviours and internalising symptoms (Castellanos-Ryan et al., 2013; Krank et al., 2011; Woicik et al., 2009), and shows adequate sensitivity and specificity with respect to predicting the majority of youth who will develop substance use and mental health problems, and the types of problems that they develop (Castellanos-Ryan et al., 2013).

2.3.3. Drinking outcomes

Alcohol use was assessed by asking students to report the quantity and frequency of their alcohol consumption over the past 6-months. Binge-drinking was assessed by asking students how often they had consumed 5 or more alcoholic beverages (4 or more for girls) on one occasion. An alcohol problem score was created using a shortened version of the Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989). RAPI scores were log-transformed in order to compensate for the skewed nature of the data.

2.3.4. Internalising symptoms

Depression and anxiety symptoms over the past 6 months were measured using the Depression and Anxiety subscales from the Brief Symptoms Inventory (Derogatis, 1993), a standardized self-report symptom inventory. Both depression and anxiety scores were log-transformed in order to compensate for the skewed nature of the data, and were then standardized using z-scores.

2.3.5. Externalising symptoms

Conduct problems and hyperactivity/inattention symptoms were assessed according to the conduct and hyperactivity/inattention subscales of the Strengths and Difficulties Questionnaire (Goodman, 1997). Both are sum scores of 5 items each. Total conduct problem and hyperactivity/inattention scores were standardized using z-scores.

2.4. Intervention

All interventions were provided at the participants' schools by a trained facilitator and co-facilitator from January to April 2008. Each intervention involved two 90-minute sessions, with an average of 6 personality-matched adolescents per group, and were conducted using manuals that included real life 'scenarios' shared by high-risk U.K. youth in specifically-organised focus groups. All 4 personality manuals were based on a cognitive-behavioural therapy model, incorporating psycho-educational and motivational enhancement therapy components (Carroll et al., 1998). In the first session, participants were guided in a goal-setting exercise designed to enhance motivation to explore personality and new ways of coping with one's personality. Psycho-educational strategies were used to educate participants about the target personality variable and the associated problematic coping behaviors, such as interpersonal dependence, avoidance, aggression, risky behaviors and substance misuse. Participants were then introduced to cognitive-behavioral model and then guided in dissecting a personal experience according to the physical, cognitive and behavioral components of an emotional response. All exercises discussed thoughts, emotions and behaviors in a personality-specific way (e.g., catastrophic thoughts and avoidance in the AS interventions). In the second session, participants were encouraged to identify and challenge personality-specific cognitive distortions that lead to problematic behaviors. For more information regarding the content of the interventions, please refer to previous publications and a recent review article (Conrod, 2016; O'Leary-Barrett, Castellanos-Ryan, Pihl, & Conrod, 2016).

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