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Process variables predicting changes in adolescent alcohol consumption and mental health symptoms following personality-targeted interventions

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HIGHLIGHTS

- This study explores change processes following personality-targeted interventions.
- Youth feedback accounted for up to 25% of the variance in alcohol use over 1 year.
- Youth self-report experiences may represent a proximal measure of program efficacy.
- Cognitive-behavioural skills and goal-setting exercises are key intervention features.
- Qualitative data can inform on intervention process and subsequent changes.

ABSTRACT

Objective: This study aims to identify key process variables that are associated with changes in alcohol consumption and mental health symptoms over 12 months following personality-targeted interventions in youth.
Method: 154 high-risk youth (aged 12–13 years) in 7 Montreal high schools were identified using the Substance Use Risk Profile Scale and participated in personality-matched interventions. Preliminary process variables were identified using a combination of psychotherapy process variables and youth-generated (qualitative) feedback immediately post-intervention.
Results: Learning, skill development and a positive group experience were key to positive behavioural change. Youth-generated feedback independently accounted for 12–25% of the variance in the change in alcohol use and mental health symptoms over 12 months. Changes in cognitive distortions and self-esteem accounted for somewhat less of the variance in alcohol use (0–9%), but a moderate-to-large portion of the variance in changes in mental health symptoms (up to 44%).
Conclusions: The study findings highlight candidate process variables relevant to future implementations of this program that might inform change processes relevant to brief interventions with youth more generally. This study suggests that youth experiences can indicate proximal measures of program efficacy, and has implications for the dissemination of this brief intervention program.
Clinical Trial registered on www.ClinicalTrials.gov, "Does Delaying Adolescent Substance Use Lead to Improved Cognitive Function and Reduce Risk for Addiction", study NCT01655615.

1. Introduction

Understanding the mechanisms of effective interventions is a vital step in allowing us to understand how therapeutic change occurs. Isolating active ingredients of treatment and focusing on components of therapy that drive change is fundamental to maximising treatment efficacy and minimising iatrogenic elements across clinical practice (Shirk & Karver, 2006). Psychotherapy process research is a necessary complement to efficacy studies (Elliott, 2010), and provides insight into the maintaining factors and etiology of psychological problems. Treatment processes are currently understudied, particularly within youth populations (Weersing & Weisz, 2002), and interventions conducted in

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a group format (Webb, Auerbach, & Derubeis, 2012; Webb & Sheeran, 2006).

A selective personality-targeted intervention program known as Preventure has been shown to delay the onset and growth of alcohol and drug misuse in youth, as well as to reduce internalising and externalising symptoms up to 3 years post-intervention in 5 separate school-based randomised controlled trials (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; O'Leary-Barrett et al., 2013). This manuscript aims to identify key process variables that predict changes in alcohol consumption and mental health symptoms over 12 months in a sub-sample of youth who have participated in the Preventure program. In order to do so, we will first describe theoretical underpinnings of the Preventure model and the potential mechanisms of action, which will inform the hypotheses examined in this study.

Preventure is based on a cognitive-behavioural therapy model (CBT; Waldron & Turner, 2008), and incorporates motivational interviewing principles (Jensen et al., 2011). The intervention also integrates intervention characteristics associated with heightened program efficacy in school settings, namely targeting high-risk youth in a preventive format and having groups led in an interactive manner with peer contributions (Gottfredson & Wilson, 2003). The following section will review the theoretical principles of the Preventure underlying these psychotherapeutic approaches.

CBT for substance misuse is based on the premise that problematic alcohol and drug use reflect a lack of adaptive coping skills, and a lack of self-efficacy in the face of negative or distressing situations (Marlatt, 1985; Witkiewitz & Marlatt, 2004). Conrod and Stewart (2005) have expanded the relapse prevention model to describe how concurrent mental health and addictive behaviours can be treated using CBT, with a particular focus on personality-specific cognitive distortions and alcohol expectancies, and personality-specific coping strategies. This premise forms the theoretical framework for Preventure. While CBT's efficacy is strongly supported, the mechanisms through which change is brought about during CBT is mixed, both in treatments for substance use (Morgenstern & Longabaugh, 2000) and other disorders (Garratt, Ingram, Rand, & Sawalani, 2007; Longmore & Worrell, 2007). This study proposes to test the extent to which core elements of the CBT model of change (coping skills, self-efficacy and cognitive distortions) brought about by the Preventure program predict changes in alcohol consumption or mental health symptoms over the 12 months following the intervention.

A second key feature of Preventure is the integration of the motivational interviewing (MI) "spirit" (Miller & Rollnick, 2002). MI is deemed particularly effective in targeting problematic behaviours where individuals experience ambivalence around change, such as substance use. Brief MI interventions are effective for a range of behaviours in youth and adult populations, although effect sizes are known to be variable (Foxcroft, Coombes, Wood, Allen, & Almeida Santimano, 2014; Hinshaw, 2002). A novel feature of the Preventure approach is that MI strategies are directed towards promoting prosocial behaviours in the absence of problems; interventions orient youth to focusing on their personal motives for change in relation to their valued life goals. Research on change processes in MI is in its infancy, but a recent study suggests that certain MI exercises, such as decisional balancing and goal setting, are associated with larger effect sizes in brief interventions for adolescents (Tanner-Smith & Lipsey, 2015). Litt, Kadden, Cooney, and Kabela (2003) demonstrated that higher levels of readiness to change enhanced the use of adaptive coping skills following interventions for alcohol dependence. The current study will provide an opportunity to examine whether participants' motivation or readiness to change are associated with a positive treatment response.

In addition to specific therapeutic modalities such as CBT and MI, common or "non-specific" factors (*i.e.*, therapeutic alliance and the use of empathy), are associated with therapeutic outcome (Wampold, 2001; Weinberger, 2014). There is a continuing debate in the field of psychotherapy as to whether common factors may lead to similar processes of therapeutic change across treatment modalities (Heimberg & Ritter, 2008; Messer & Wampold, 2002). Indeed, several authors cite evidence suggesting that there is no significant difference in effectiveness between treatments (*e.g.*, Wampold, 2001), including alcohol interventions (Klimas et al., 2014), delivered in either group or individual formats (Sobell, Sobell, & Agrawal, 2009; Tanner-Smith & Lipsey, 2015). It is thus important to consider the role of common or non-specific therapeutic factors when investigating intervention process. In Preventure, it is thought that grouping youth with peers with similar personality profiles may help to normalise personality-specific difficulties (*e.g.*, feelings of worthlessness in youth prone to hopelessness) and to facilitate introspection through identification with similar peers. Normalising difficulties and reducing stigma may improve self-esteem, which in turn may facilitate change (Budman et al., 1989; Foxcroft & Tsertsvadze, 2011; Vigna-Taglianti et al., 2014). Other studies of group psychotherapy highlight that social support among group members is one of the strongest predictors of treatment response (Burlingame, Fuhriman, & Johnson, 2004), and perceptions of group climate have also been shown to influence participants' benefit from psychotherapy groups (Ogrodniczuk & Piper, 2003).

In addition to research-driven hypotheses, assessing patients' perspectives is particularly important in process research, as studies suggest that patients' perceptions of group factors may be more strongly associated with outcomes than ratings by observers or therapists (Harel, Shechtman, & Cutrona, 2011; Piper, Ogrodniczuk, Lamarche, Hilscher, & Joyce, 2005). Indeed, integrating stakeholders (in this case, youth participants) into the research process is expected to enhance the relevance and implementation of an intervention approach (Graham & Tetroe, 2009; Henderson et al., 2012). Many component studies investigating CBT processes to date have focused on exploring intervention mechanisms from an investigator-driven perspective based on the theorised intervention model (*e.g.*, changes in cognitions and coping), with mixed results as mentioned above. Qualitative data representing participants' perspectives can be used to assess whether participants' experiences match the intended therapeutic model. Indeed, mixed methods approaches are recommended in investigating intervention process (Oakley et al., 2006; Stiles, Hill, & Elliott, 2015). More importantly, it is necessary to link these perspectives to actual behavioural change, which is not often done in such research.

The current study aims to identify key process variables that predict changes in alcohol consumption and internalising and externalising symptoms over 12-months in a sub-sample of youth who have completed personality-targeted post-intervention in an ongoing randomised controlled trial. Investigating changes during the first 12 months post-intervention is of particular interest as a recent Preventure study suggests that early intervention effects on alcohol consumption and mood are key in accounting for longer-term intervention effects (O'Leary-Barrett, Castellanos-Ryan, Pihl, & Conrod, 2016). It is expected that levels of alcohol consumption will increase during the 12 months post-intervention, as it is normative for youth to take up and experiment with alcohol use from 12 years of age (Traoré et al., 2014). Similarly, internalising and externalising symptoms are known to increase across childhood and adolescence (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). A reduced growth in alcohol consumption or mental health symptoms over the first 12 months post-intervention may therefore represent a proximal marker of longer term intervention efficacy. This study will use a mixed methods design including both quantitative and qualitative data in order to investigate several questions of interest. Firstly, the role of psychotherapy process variables (quantitative variables reflecting CBT, MI and general therapeutic process) in predicting post-intervention change in alcohol consumption and mental health symptoms will be explored. Secondly, the association between youth-generated (qualitative) data and post-intervention change will be explored. In this way, youth feedback will be used to