
A Preliminary Examination of a Strengths-Based Treatment for Adolescent Substance Use Issues Examen préliminaire d'un traitement axé sur les forces destiné aux adolescents ayant des troubles liés à la toxicomanie

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ABSTRACT

Adolescent substance use disorders are a major public health concern. Given the many challenges associated with treating this population, ongoing research in this area is imperative. The purpose of the current study was to provide a preliminary examination of the substance use outcomes associated with an adolescent residential treatment program that utilizes a strengths-based approach. The current study examined treatment outcomes in 61 adolescents (aged 14 to 18 years) who completed a 5-week strengths-based residential treatment program for adolescent substance use issues. Results showed significant reductions in frequency of alcohol and marijuana use from pretreatment to 3 and 6 months posttreatment, and in opioid use frequency from pretreatment to 3 months posttreatment. In addition, changes in self-reported substance use goal progress scores indicated significant improvements in goal progress from pretreatment to 3 months posttreatment; these improvements were maintained at 6 months posttreatment. Finally, depressive symptomology was also found to decrease significantly from pretreatment to posttreatment, and this decrease was found to be predictive of better substance use outcomes at 6 months posttreatment. These findings add to the literature by providing preliminary data that support the utility of the strengths-based approach in the treatment of adolescence substance use issues.

RÉSUMÉ

La toxicomanie chez les adolescents représente un enjeu majeur en santé publique. Étant donné les nombreux défis que comporte le traitement de cette population, la recherche continue en ce domaine est indiquée. La présente étude a pour objet de fournir un examen préliminaire des effets sur la consommation de substances illicites en lien avec un programme de traitement résidentiel de la toxicomanie chez des adolescents, qui mise sur une approche axée sur les forces. L'étude en cause a porté sur les résultats du traitement chez 61 adolescents (âgés de 14 à 18 ans) qui ont terminé un programme résidentiel de traitement de 5 semaines axé sur les forces et conçu pour des adolescents ayant des troubles liés à la toxicomanie. Les résultats ont révélé des réductions significatives dans la fréquence de consommation d'alcool et de marijuana lorsqu'on compare les périodes

antérieure au traitement et postérieure de 3 à 6 mois; on a observé des résultats similaires pour la fréquence de consommation d'opioïdes lorsqu'on compare les périodes antérieure au traitement et postérieure de 3 mois. De plus, d'après les résultats de réalisation des objectifs de consommation rapportés par les participants, on a noté des améliorations significatives lorsqu'on compare les périodes antérieure au traitement et postérieure de 3 mois, et ces améliorations se sont maintenues pour la période de 6 mois suivant le traitement. Enfin, on a aussi observé une diminution significative des symptômes de dépression entre les périodes antérieure et postérieure au traitement, et cette diminution permettait de prédire de meilleurs résultats quant à la consommation pendant la période de 6 mois suivant le traitement. Ces observations viennent enrichir la littérature en fournissant des données préliminaires appuyant l'utilité de l'approche axée sur les forces pour le traitement des troubles liés à la toxicomanie chez les adolescents.

Substance use among adolescents continues to be a major public health concern. While many adolescents use substances in moderation, others become preoccupied with their substance use and develop patterns of maladaptive use that can have harmful biological, psychological, and social effects on adolescent development (Squeglia, Jacobus, & Tapert, 2009). Research shows that 11.4% of adolescents develop a substance use disorder (SUD) and that these individuals are at increased risk of having comorbid mental health issues, most notably anxiety, mood, and behavioural disorders (Merikangas et al., 2010). Given the prevalence of adolescents suffering from maladaptive substance use and the adverse consequences associated with it, ongoing development of evidence-based treatment is important.

To date, various treatment programs that differ in both therapeutic modality and service intensity (e.g., outpatient versus residential services) have been implemented for the treatment of adolescent substance use issues. The most prevalent therapeutic modalities in the literature include 12-step-based programs, family-based therapy, behavioural therapy, cognitive-behavioural therapy (CBT), motivational-based therapy, therapeutic community interventions, and pharmacotherapy, with most treatment programs following an eclectic approach, utilizing components from several of these treatment modalities (Winters, Botzet, & Fahnhorst, 2011). Despite research evidence supporting the use of some of these treatment programs, continued research in this area is imperative (Winters, Botzet, Fahnhorst, Stinchfield, & Koskey, 2009). Adolescent substance use issues remain a particularly challenging problem to address, as many adolescents attend treatment but drop out prematurely or quickly relapse following treatment completion (Hser et al., 2001; Marcus et al., 2013; Schroder, Sellman, Frampton, & Deering, 2009; Waldron & Turner, 2008). Numerous comorbid mental health issues have been shown to predict poor treatment outcomes, including depression, behaviour problems, trauma, abuse, family issues, and negative peer influences (Anderson, Ramo, Schulte, Cummins, & Brown, 2007; Funk, McDermeit, Godley, & Adams, 2003; Schroder et al., 2009; Subramaniam, Stitzer, Clemmey, Kolodner, & Fishman, 2007; Subramaniam, Stitzer, Woody, Fishman, & Kolodner, 2009; Winters, Stinchfield, Latimer, & Stone, 2008). These findings suggest that an important aspect of treatment

would involve addressing these comorbid issues in addition to providing strategies for reducing/abstaining from substances.

In recent years, the strengths-based approach has become more prominent in child and adolescent mental health treatments (Biswas-Diener, Kashdan, & Minhas, 2011). For example, the strengths-based approach has been applied successfully to youth who have intellectual difficulties and have engaged in sexually abusive behaviours, as well as with youth engaging in oppositional defiant behaviours (Ayland & West, 2006; Day-Vines & Terriquez, 2008). What makes the strengths-based approach inherently different from other approaches is its primary emphasis on client strengths and resources as opposed to client deficits or presenting issues; this perspective allows for a more complete picture of individuals. Individual strengths can be defined as “a set of developed competencies and characteristics embedded in culture that are valued both by the individual and by society” (Rawana & Brownlee, 2009, p. 2). The goal of strengths-based clinical practice is to help youth facilitate improvements in problem areas through a more purposeful and effective utilization of their personal strengths and positive resources. As Jones-Smith (2013) pointed out, strengths-based therapy should create a strengths-building environment by which the clients can recognize and appreciate their strengths. Working from this perspective is in accordance with the adolescent stage of development because adolescence is a period of time that is defined by growth, learning, and skill development—processes that the strengths-based approach strives to encourage (Lerner, Almerigi, Theokas, & Lerner, 2005; Lewin-Bizan, Bowers, & Lerner, 2010). However, despite an increase in the number of treatment programs that incorporate the strengths-based approach, research examining such programs remains underdeveloped. Future research needs to examine the treatment outcomes associated with strengths-based programming.

Like other areas of youth mental health, little research has been conducted examining strengths-based programs targeting adolescent substance use issues. Strengths Oriented Family Therapy (SOFT), which utilizes a formal strengths and resources assessment to help develop a solution-focused treatment plan, has been found to help reduce adolescent substance use and related problems (Smith, Hall, Williams, An, & Gotman, 2006). Cheon (2008) proposed that the incorporation of a strengths-based developmental perspective to youth substance use prevention and reduction is important to help reach best practice. He argued that providing youth with opportunities to engage in positive activities is a fundamental means of preventing and reducing their substance use while also encouraging positive growth and development. This perspective is in accordance with the strengths-based philosophy in the treatment of adolescent substance use issues outlined by Harris, Brazeau, Clarkson, Brownlee, and Rawana (2012a, 2012b). Harris et al. (2012a, 2012b) suggested that helping youth examine, develop, and implement their strengths ultimately leads to the engagement in more prosocial activities (e.g., constructive leisure and recreation) and the development of more adaptive coping strategies (e.g., exercise, writing) as alternatives to substance use. In these qualitative evaluations of a residential strengths-based treatment program for

adolescent substance use, Harris et al. found evidence for the clinical utility of the strengths-based aspects of the program. Results showed that most adolescents had a positive experience during treatment and that the strengths-based aspects of the program were particularly well received. Respondents frequently reported that the strengths-based aspects of the treatment were often helpful and contributed further to their engagement in the program. In addition, many respondents reported that it was encouraging to be in an environment that was strengths-based and that it increased their motivation and confidence in working toward overcoming their substance use issues.

CURRENT STUDY

The primary purpose of the current study was to provide a preliminary examination of the substance use outcomes associated with an adolescent residential substance use treatment program that utilizes a strengths-based approach. This program is built upon an eclectic framework that incorporates strengths-based treatment strategies and techniques with more evidence-based cognitive-behavioural and motivational interventions. The primary objective of this program is to provide youth with a safe and encouraging environment that allows for the examination, further development, and use of their individual and group strengths, with hopes of helping youth understand how their strengths can be used to help them decrease or abstain from substance use engagement and move further toward future positive growth and development. Upon entering treatment, youth complete a series of strengths-based measures, including the Strengths Assessment Inventory (Brazeau, Teatero, Rawana, Brownlee, & Blanchette, 2012), as well as engage in narrative assessment, to help youth and their counsellors develop a better understanding of the youths' perceived strengths and interests. A major part of treatment is to provide youth with opportunities to employ and practice their identified strengths. For example, a youth may possess interpersonal strengths such as strong communication skills, the ability to build rapport with others, and empathy. The current treatment would aim to provide this youth with opportunities to build on his or her interpersonal competencies. For instance, a large component of this program is the engagement in social activities (e.g., recreation, team building exercises, group therapy) with both peers and treatment staff that encourage youth to use their social competencies in ways that contribute to a supportive social climate and help facilitate the development of positive relationships. Individual counselors help youth explore how such interpersonal strengths can be used to develop positive relationships with family members, prosocial peer groups and significant others, relationships that often become strained for youth living with substance use and mental health issues. Throughout treatment, youth are also encouraged to explore strengths within each other. For example, a group therapy exercise frequently employed in the current program is to have youth identify a strength (e.g., leadership) in a fellow group member and provide an example of how that strength was demonstrated by their fellow group member (e.g., took on a leader-

ship role in recreation activity among peers). Once strengths are identified, group facilitators encourage youth to discuss how such strengths can be applied to help youth overcome specific life challenges. Over the course of treatment, youth are provided with continual opportunities to explore, develop, and use their strengths while engaging in individual counselling, group therapy, educational sessions, life skills development, leisure and recreation opportunities, and relapse prevention work (see Appendix for additional strengths-based exercises employed by the current treatment program).

For the current study, four hypotheses were proposed. First, it was hypothesized that adolescents' frequency of self-reported substance use would significantly decrease from pretreatment to 3 months posttreatment and from pretreatment to 6 months posttreatment. Second, it was hypothesized that adolescents' self-reported substance use goal attainment scores would significantly improve from pretreatment to 3 months posttreatment and from pretreatment to 6 months posttreatment. Third, it was hypothesized that adolescents' depressive symptomology would significantly decrease from pre- to posttreatment. Depressive symptomology was examined throughout treatment and viewed as a proxy measure for therapeutic change. This was particularly important as depressive symptomology has been found to be highly prevalent among this population and has been found to decrease in some adolescents over the course of residential treatment for adolescent SUDs (Subramaniam, Lewis, Stitzer, & Fishman, 2004). Lastly, it was hypothesized that pre- to posttreatment decreases in depressive symptomology would be predictive of pre- to posttreatment decreases in overall substance use frequency.

METHOD

Participants

Participants for this study included 61 adolescents (39 females and 22 males) ranging in age from 14 to 18 years ($M = 16.57$, $SD = 1.04$) who entered and completed a 5-week residential strengths-based treatment for adolescents coping with substance use issues. All participants had been referred to treatment for substance use issues by either a community mental health and addictions counsellor or family physician. All participants agreed to participate in the study and to be contacted at 3 and 6 months posttreatment for follow-up data collection. No further inclusion or exclusion criteria were utilized. The treatment program is located in a small city in northern Ontario. Many of the adolescents who attend this program are from remote communities who do not have access to treatment services, and as a result, travel long distances to the treatment facility. At intake, the following substances were indicated to have been used by participants in the past 90 days: alcohol (70.5%), cannabis (65.6%), tobacco (62.3%), opioids (39.3%), cocaine (26.2%), hallucinogens (21.3%), amphetamines (13.1%), benzodiazepines (13.1%), over-the-counter codeine preparations (9.8%), inhalants (9.8%), barbiturates (1.6%), and heroin/opium (1.6%).

Measures

Substance use. The Psychoactive Drug History Questionnaire (PDHQ) was used in the study (Sobell, Kwan, & Sobell, 1995). This instrument provides information on the quantity and frequency of substance use specifically by drug category. Each drug category that is endorsed as used over the past year is measured on the number of days used in the past 90 days. Thirteen drug categories are included on this measure (e.g., alcohol, cocaine/crack, cannabis). The PDHQ has been found to have good test-retest reliability.

Substance use goal progress. A self-report substance use goal progress measure was created for the current study. With assistance from their substance abuse counselor, during the first week of treatment adolescents began to develop substance use goals to work toward during treatment and following treatment. Goals outlined targets for substance use abstinence and/or substance use reduction. Examples of participants' self-identified goals include "do not smoke marijuana at school for the first six months following treatment" and "do not use opioids or other painkillers for the first six months following treatment." Using a 10-point Likert-type scale ranging from "I do not feel that I have achieved this goal" to "I have achieved this goal," this measure monitors goal progress at several points in time including at the beginning of treatment, 3 months posttreatment, and 6 months posttreatment. Although the psychometric properties of this measure have yet to be evaluated, it allowed for the evaluation of self-directed goal achievement across individuals. The assessment of self-directed goals was conceptualized as being essential to the strengths-based approach to treatment and was therefore included in the present study.

Depression. The Centre for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) was used to assess overall levels of depression over the previous week. This self-report questionnaire measures 20 symptoms of depressed mood that are rated on a 4-point scale ranging from 0 (*rarely or none of the time*) to 3 (*most or all of the time*). These items are totaled to create a score ranging from 0 to 60, with higher scores indicating the presence of more symptoms of depression and a cutoff score of 16 or greater indicating that the individual is at risk of clinical depression. The CES-D has been shown to have high internal consistency and good content validity (Carleton et al., 2013). In the current study, Cronbach's alpha for the CES-D was .78.

Procedure

Ethics approval for the current study was obtained from the university's research ethics board. Ethics approval was also obtained from relevant health care ethics committees.

Before entering a 5-week residential treatment for adolescent substance use issues, adolescents were provided with information about the study and informed consent was obtained from those who agreed to participate. Participants under the age of 18 years provided assent, and their guardian was required to provide

informed consent for their participation in the study. Upon entering treatment, participants completed the PDHQ and the CES-D. In addition, during the first week of treatment, participants began to develop substance use treatment goals. Participants completed the CES-D again at the end of treatment. At 3- and 6-month posttreatment follow-up periods, participants were contacted to complete the PDHQ and substance use goal progress measures.

Data Analysis

In order to examine patterns of drug use across time (pretreatment, 3 months posttreatment, 6 months posttreatment), the total number of instances of self-reported drug use of the three most frequently used substances (alcohol, marijuana, and opioids; tobacco was excluded) that occurred over the 90 days preceding treatment were examined. Analyses were limited to these three substances because the reported frequencies and quantities of use of the remaining substances were too small to detect meaningful pre- to posttreatment changes within the current sample. First, a series of one-way repeated measures analyses of variances (ANOVAs) were used to examine the effect of time on the frequency of use for each substance. Mauchly's test indicated that the assumption of sphericity had been violated ($p < .05$) for two of these analyses; therefore, a Greenhouse-Geisser correction was implemented for the alcohol and opioid analyses. Kolmogorov-Smirnov and Levene's tests indicated that there were no substantial violations of the assumptions of normality and equality of variances. A priori tests using a Bonferroni correction were utilized for ANOVAs found to have a significant difference across time periods. For a priori comparisons, it was predetermined that differences between the substance use frequency scores of pre- and 3-month posttreatment and pre- and 6-month posttreatment would be examined. Second, a one-way repeated measures ANOVA was also used to examine the effect of time (pretreatment, 3 months posttreatment, 6 months posttreatment) on self-report substance use goal progress. Mauchly's test indicated that the assumptions of sphericity had been violated ($p < .05$) and a Greenhouse-Geisser correction was utilized, while Kolmogorov-Smirnov and Levene's tests revealed no violations of the normality or equality of variances assumptions. Post hoc tests using the Bonferroni correction were utilized. Third, to examine differences in pre- and posttreatment CES-D scores, a paired-samples t -test was used.

Finally, to examine the relationship between pre- to posttreatment change in CES-D and pretreatment to 6-month posttreatment change in substance use frequency, several new variables were created. An overall substance use variable was calculated by adding up the total number of days that adolescents used alcohol, marijuana, and opioids and dividing this number by three. An overall substance use frequency variable was calculated for both pretreatment and 6-months posttreatment time periods. Two change score variables were then created: (a) between overall substance use frequency at pretreatment and overall substance use frequency at 6-months posttreatment, and (b) between CES-D baseline and CES-D posttreatment scores. A sequential regression analysis was conducted to examine

the ability of change in CES-D scores (Step 2) in predicting change in overall substance use frequency, after controlling for baseline CES-D and pretreatment overall substance use frequency scores (Step 1).

RESULTS

Participants for the current study included 61 adolescents, of whom 53 (86.9%) provided data at 3 month follow-up and 49 (80.3%) provided data at 6 month follow-up.

Substance Use

Substance use frequency was measured by the self-reported number of days that a specific substance was used over the preceding 90 days. Alcohol, marijuana, and opioid use frequencies were examined, as these three substances were the most frequently used substances according to self-reports at pretreatment. See Table 1 for frequency of substance use means and standard deviations across time periods.

Table 1
Means and Standard Deviations of Substance Use Frequency Across Time Periods

Variable	<i>n</i>	Pretreatment	3 months posttreatment	6 months posttreatment
Substance				
Alcohol	30	20.7 (12.5)	9.8 (7.8)	9.3 (8.3)
Marijuana	30	34.9 (14.1)	17.9 (12.6)	18.87 (12.2)
Prescription opioids	20	9.6 (7.7)	4 (7.3)	5.6 (9.3)

In order to examine patterns of drug use across time, a one-way repeated measure ANOVA was utilized for each of alcohol, marijuana, and opioid use. Greenhouse-Geisser correction was implemented for the alcohol and opioid analyses. Results showed that time had a significant main effect on alcohol use [$F(1.55, 44.84) = 20.54, p < .001, \eta^2 = .42$], marijuana use [$F(2, 58) = 21.5, p < .001, \eta^2 = .42$], and opioid use [$F(1.45, 26.01) = 4.3, p = .035, \eta^2 = .19$]. A priori tests using a Bonferroni correction revealed significant differences in alcohol and marijuana frequency between pretreatment and 3-months posttreatment periods and from pretreatment to 6-months posttreatment periods (see Table 2). For opioid use, a priori tests using Bonferroni correction revealed a significant difference in substance use frequency between pretreatment and 3-months posttreatment time periods, but not between pretreatment and 6-months posttreatment time periods. These findings indicate that the self-reported number of days adolescents used alcohol and marijuana significantly decreased from pretreatment to 3-months posttreatment and from pretreatment to 6-months posttreatment. Furthermore, the self-reported number of days adolescents used opioids sig-

nificantly decreased from pretreatment to 3-months posttreatment, but did not significantly differ between pretreatment and 6-months posttreatment.

Table 2
Bonferroni Comparisons for Change in Substance Use Frequency Between Pre- and Posttreatment Time Periods

Comparisons	Mean difference in substance use f (days)	Std. Error	95% CI	
			Lower bound	Upper bound
Pretreatment vs 3 months posttreatment				
Alcohol	10.9**	2.14	5.47	16.34
Marijuana	17**	3.17	8.93	25.06
Px opioids	5.58*	1.33	2.07	9.09
Pretreatment vs 6 months posttreatment				
Alcohol	11.4**	2.37	5.38	17.42
Marijuana	16.1**	3.07	8.29	23.85
Px opioids	4	1.98	-1.21	9.21

* $p < .01$, ** $p < .001$.

Substance Use Goal Progress

A one-way repeated measures ANOVA with a Greenhouse-Geisser correction was used to examine self-reported substance use goal progress across time. Results showed that time had a significant effect on goal progress, $F(1.46, 55.51) = 14.85$, $p < .001$. Post hoc tests using the Bonferroni correction showed that pretreatment goal progress scores ($M = 3.2$, $SD = 2$) differed significantly from 3-month ($M = 5.15$, $SD = 1.9$) (95% CI [-3.03, -.92], $p < .001$) and 6-month ($M = 4.9$, $SD = 2.3$) (95% CI [-2.9, -.54], $p = .002$) posttreatment self-report goal progress scores. No significant difference was found between 3- and 6-month goal progress scores. These findings show that according to participant self-reports, participants made significant gains toward working on their substance use goals from pretreatment to 3 months posttreatment and that these gains were maintained at 6 months posttreatment.

Depression Scores

A paired samples t -test was conducted to examine pre- to posttreatment change in CES-D scores. Results showed that there was a significant difference between CES-D scores at pre- ($M = 13.6$, $SD = 4.4$) and posttreatment ($M = 11.4$, $SD =$

4.8), $t(47) = 4.59$, $p < .001$, $d = .4$. These findings show that adolescents' scores on the CES-D were significantly lower at posttreatment than pretreatment, suggesting a reduction in adolescents' depressive symptomology over the course of treatment.

A sequential regression analysis was conducted to examine the ability of pre- to posttreatment change in CES-D scores in predicting pretreatment to 6-month posttreatment change in overall substance use frequency. To control for pretreatment overall substance use frequency and pretreatment CES-D scores, these variables were entered in the first step of the regression analysis. Upon entry of pre- to posttreatment change in CES-D scores in the second step, it was determined that CES-D change made a significant contribution to the prediction of overall substance use frequency change (over and above Step 1 of the analysis), $F(1,3-6)$ for r^2 change = .07, $p = .024$, (multiple $R = .581$). These findings indicate that, after controlling for overall substance use frequency and pretreatment CES-D scores, change in CES-D scores from pre- to posttreatment accounted for 7% of the variance in change in overall substance use frequency with reductions in CES-D scores predicting reductions in overall substance use frequency.

DISCUSSION

The current study examined pre- to 3- and 6-month posttreatment changes in substance use frequency and substance use goal progress outcomes for adolescents who entered and completed a strengths-based residential treatment program for substance use issues. Pre- to posttreatment change in depressive symptomology score was also examined, along with the utility of change in depressive symptomology as a predictor of pre- to 6-month posttreatment change in overall substance use frequency. Overall, findings from the current study add to the growing body of literature that supports the relationship between strengths-based programs and positive adolescent outcomes (e.g., Ayland & West, 2006; Day-Vines & Terriquez, 2008; Tebes et al., 2007).

Substance Use

Self-reported frequency of alcohol, marijuana, and opioid use were found to have significantly decreased from pretreatment to 3-months posttreatment. Alcohol and marijuana frequency were also found to have remained significantly lower when assessed 6-months posttreatment. Differences in opioid use approached but failed to reach significance from pretreatment to 6-months posttreatment. There are several possible explanations as to why change in opioid use frequency failed to maintain significance at 6-months posttreatment. Sample size of participants who completed both the 3- and 6-month follow-ups was smaller for opioid users ($n = 20$) than alcohol ($n = 30$) and marijuana users ($n = 30$), likely resulting in less power to find a significant difference between time periods. Furthermore, adolescents suffering from opioid use compared to those suffering from alcohol/marijuana use have been shown to have poorer long-term prognoses that include more frequent relapse following substance abuse treatment (Subramaniam et al.,

2009). In other words, it is likely the case that opioid abuse in adolescence is harder to treat, resulting in poorer treatment outcomes and the need for special attention regarding improved interventions for this population.

Another measure related to substance use change that was examined in the current study was substance use goal progress. In line with strengths-based and harm-reduction approaches, during the first week of treatment all adolescents explicitly created a detailed goal of either reducing or stopping their substance use. Adolescents' self-reports at 3 months and 6 months posttreatment suggest that adolescents were generally able to work toward accomplishing their substance use goals, as significant increases in goal progress were found between pretreatment and both follow-up time periods. Substance use goal progress provides another means of assessing substance use treatment outcomes (Kiresuk, Smith, & Cardillo, 1994). Goal progress or goal attainment scaling measures individuals' desired treatment outcomes, in this case the specific substance use behaviours that the adolescent hopes to change over time.

Depressive Symptomology and Substance Use Outcomes

Symptoms of depression are often experienced by adolescents with substance use issues and have been found to be associated with negative substance abuse treatment outcomes (Subramaniam et al., 2007, 2009). The relationship between depression and maladaptive substance use is unclear. However, it is likely a cyclical relationship that can be self-reinforcing. For instance, among adolescents, depressive symptomology has been found to increase the risk of initial substance use onset (e.g., Kuo, Gardner, Kendler, & Prescott, 2006). From this perspective, adolescents suffering from depression may engage in substance use as a means of self-medicating. It may also be the case that chronic or maladaptive patterns of substance use may further worsen or contribute to depressive symptoms (e.g., Hallfors, Waller, Bauer, Ford, & Halpern, 2005).

The treatment program examined in the current study is a residential program that prohibits substance use over the 5-week treatment period; as a result, comparing substance use frequency between pre- and posttreatment was not meaningful. Depressive symptomology was measured by CES-D scores and used as a proxy measure to examine change across these time periods. Results showed that CES-D scores had significantly decreased from pre- to posttreatment discharge with a small to moderate effect size ($d = .4$) (Cohen, 1992). These findings are consistent with Subramaniam et al. (2004), who found a significant reduction in depression scores following a 5-week period of residential treatment for adolescent substance abuse. However, these authors did not examine the relationship between change in depression scores and substance use outcomes. Findings in the current study show that after controlling for pretreatment scores, decreases in CES-D scores were associated with decreases in substance use frequency from pretreatment to 6 months posttreatment, accounting for 7% of the variance in substance use frequency change. In other words, adolescents' depressive symptomology decreased over the course of treatment, and this decrease predicted reduced substance use

frequencies 6 months posttreatment. Previous research examining reduced substance use as a secondary benefit of a cognitive-behavioural depression prevention program for adolescents showed that adolescents who experienced a decline in depressive symptoms were more likely to exhibit lower rates of long-term substance use (Rohde, Stice, Gau, & Marti, 2012).

In explaining the decrease in depressive symptoms over the 5-week residential substance use treatment program, the argument could be made that abstinence alone could account for this decrease. However, few studies have examined the effect of abstinence on changes in depressive symptomology among adolescents with severe substance use, and those that have show mixed results (e.g., Riggs, Baker, Mikulich, Young, & Crowley, 1995; Subramaniam et al., 2004). It may also be the case that the strengths-based approach may help youth view themselves in a more positive light, as the primary objective of this program is to provide youth with a safe and encouraging environment that allows for the examination, further development, and use of their individual and group strengths. As a result, youth may begin to feel better about themselves and their abilities over the course of treatment, contributing to a decrease in depressive symptomology. Overall, the CES-D is clearly not a comprehensive measure of treatment change when evaluating an adolescent substance abuse treatment program. However, the literature does demonstrate a strong relationship between substance use issues and depression in adolescents and, thus, appears to have value in using depression scores as a means of measuring meaningful change for adolescents in residential programs where substance use is prohibited. Taken together, there is some evidence to support that the treatment program may facilitate the reduction of depression and contribute to positive treatment outcomes.

Limitations

The current study has a few important methodological limitations that should be acknowledged. First, the methodological design of the current study did not include a control or comparison group and, thus, posttreatment improvements in outcome measures cannot be causally linked to the treatment program. As a result, the argument could be made that posttreatment outcomes could simply be the result of regression toward the mean. However, adolescents suffering from severe substance abuse issues, like those experienced by participants in the current sample, do not typically experience spontaneous reductions in substance use frequency without intervention (Tanner-Smith, Wilson, & Lipsey, 2013). It is important to acknowledge, though, that the positive treatment outcomes observed in the current study could simply be the result of participants having engaged in a treatment program for adolescents and not necessarily due to the strengths-based components of treatment. Therefore, the present study represents a preliminary attempt to establish an empirical foundation upon which more stringent trials can build upon (e.g., quasi-experimental or randomized controlled trials).

Second, because the current study did not include a comparison group, current findings cannot speak to the efficacy of this strengths-based program in

comparison to other treatment programs. Third, despite adolescent strength recognition and utilization being primary objectives of strengths-based interventions, the current study did not employ an outcome measure that specifically assessed adolescent strengths. Future research should utilize strengths-based outcome measures such as the Behavioral and Emotional Rating Scale (Epstein, 1999), the Youth Version of the Assessing Developmental Strengths Questionnaire (Donnon & Hammond, 2007), and the Strengths Assessment Inventory (Brazeau et al., 2012) to examine pre- to posttreatment changes in perceived strengths. Fourth, the current sample was restricted to only those adolescents who completed the treatment program. This sample restriction limits the generalizability of the current findings and may have contributed to inflation of the observed posttreatment outcomes. Further research examining strengths-based programs for substance use should include noncompleters of treatment. Lastly, the small sample size observed in the current study necessitates replication. Small sample size can contribute to reduced statistical power, which can in turn lead to an elevated risk in Type II error, along with overestimates of effect size (Button et al., 2013).

Implications and Future Directions

Overall, findings in the current study provide preliminary support for an association between the adolescent strengths-based program examined and positive substance use outcomes following treatment as measured by substance use frequency and substance use goal progress. The strengths-based approach is becoming increasingly utilized in treatment programs for adolescents; however, research examining these programs is limited, particularly strengths-based programs targeting substance use issues.

Despite limited research, a few previous studies have been conducted in this area. Smith et al. (2006) provided support for the utilization of the strengths-based approach when working with youth and their families struggling with adolescent substance use issues. Further research by Harris et al. (2012a, 2012b) suggested that the strengths-based approach is well received by many adolescents and may be particularly useful in helping to engage youth in treatment. The findings of the current study add to this area of research. Although far from conclusive, these studies begin to lend support to the claim that the strengths-based approach may be one means of helping to improve already developed evidence-based treatments for adolescent substance use issues.

Adolescent substance use issues are recognized in the literature as being particularly difficult to treat, and as a result, treatment programs for this population need to continue to evolve in order to reach improved outcomes. Future research needs to examine the specific strengths-based components of such treatment programs and the degree to which these components contribute to positive treatment outcomes over and above those components already established in the field as evidence-based, such as motivational interviewing, cognitive-behavioural, and family-based therapeutic modalities.

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Appendix

Strengths-Based Group Therapy Exercises

Identifying Strengths

As a group, participants are asked to brainstorm as many strengths (e.g., caring, hard working, passionate) as they can while a group member or group facilitator writes them down on a whiteboard. Occasionally, a group facilitator may ask questions to help participants identify additional strengths. Once the list is complete, participants are assigned their own unique colour (e.g., Jack - blue, Amy - green, Bill - yellow). Participants will use the assigned colours to identify strengths that they perceive fellow group members as possessing. For example, if Jack perceives Amy as having a good sense of humour he will use a green marker to underline the strength “good sense of humour.” Ideally, the whiteboard will become very colourful and group members will have acknowledged several strengths for each participant. Group discussion pertaining to shared strengths helps develop group cohesion among group members.

Strengths and the Stages of Change

The stages of change model (i.e., precontemplation, contemplation, preparation, action, relapse, and maintenance) is introduced to the participants. One at a time, each participant identifies their perceived stage within the model. Next, each participant identifies a strength that they have previously used, and/or one that they are currently using to help achieve their current stage. For example, Bill may identify himself as having “perseverance” that has helped him reach the “action”

stage. If participants are unable to identify a strength, fellow group members can be given the opportunity to assist. The primary purpose of this exercise is to help participants feel empowered in their recovery and to begin to think about their recovery from a strengths-based perspective.

What Is Going Well in Treatment?

Over the course of treatment, participants are regularly asked, “What is going well in treatment?” This question helps generate discussion about participants’ perspectives on the positive aspects of treatment, benefits of treatment, and the encouraging behavioural changes made while in treatment. Participants are also asked what strengths they have utilized while in treatment to help them realize treatment successes.

Strengths-Based Life Map

Participants are given the task of creating a life map detailing significant life events, including substance use milestones. Participants are provided with a large sheet of poster-sized paper or cardstock and are asked to chronologically describe events from birth leading up to the present moment in treatment. Participants are encouraged to only report life events that they are comfortable talking about in group therapy. Life maps may include words, drawings, and/or pictures. Life maps are completed during participants’ own time over a one-week period. The life maps are presented during group therapy. Following each participant presentation, group facilitators help participants reframe any negative life events into positive ones by engaging the participant in a discussion surrounding strengths that he/she used in that situation to cope with the hardship. Additionally, potential strengths that were used in positive life events are also discussed within the group. The primary purpose of this exercise is to help participants begin to see the strengths from which they are able to draw during hardship, along with the strengths they possess that have contributed to positive life experiences. This is also a great exercise to help create cohesion between group members, as many members begin to see that they have had similar life experiences to other group members.

Strengths and Coping with Difficult Emotions

As a group, participants brainstorm as many emotions (e.g., happy, sad, angry) as they can while a group member or group facilitator writes them down on a whiteboard. Occasionally, the group facilitator may ask questions to help participants identify additional emotions. Once the list is complete, a group facilitator discusses the list, one emotion at a time, asking participants to discuss how we know someone is feeling that emotion (e.g., someone who is angry may raise their voice). Participants discuss the relationship between experiencing difficult emotions and the urge to use substances. From this discussion, participants are encouraged to discuss their previously identified strengths/interests and how such strengths/interests can help them cope with difficult emotions in more constructive ways—for example, coping through physical activities (e.g., running, sport),

leisure activities (e.g., music, art, journaling), or talking to family or friends for support. Over the course of treatment, participants are regularly encouraged to utilize their strengths and interests to help cope with difficult thoughts or emotions they may be experiencing.

Good Deeds

Participants are provided pens and slips of paper and asked to write anything they see as positive that someone did for them or others over the course of the week (e.g., listened when I was sad, helped me with my chore). These good deeds are placed into a box. Each week, during group session, the slips of paper are removed from the box and read to the group. This activity promotes positive self-esteem by encouraging participants to recognize the sometimes-overlooked positive things they do for one another in daily living.

Strengths Ball

While seated in a circle, participants toss a ball around the group, ensuring that every participant gets at least one turn. The person who catches the ball must choose one of the numerous strengths printed on the ball (e.g., courageous, friendly), state one group member who possesses that strength, and briefly discuss a situation in which that person demonstrated that strength (e.g., Bill demonstrated patience when he was trying to show me how to play the guitar). This is a great exercise for engaging all group members.

High-Risk Situations and the Role of Personal Strengths

Participants are asked to independently detail two high-risk situations that they may experience following treatment (e.g., Amy's best friend is having a party and asks her to attend). One at a time, participants present one of their high-risk situations to the group. Group members are encouraged to make suggestions, specific to that individual's unique strengths and life circumstances, regarding how that individual may manage or cope with that high-risk situation (e.g., "Amy you are a very open and honest person. Do you think you could tell your friend that you do not want to attend their party because there will be people drinking there?"). The primary purpose of this exercise is to get participants thinking about potential high-risk situations following treatment and how they can apply their personal strengths to help manage those high-risk situations.

Strengths-Focused Discharge Letter

Prior to leaving treatment, participants write a discharge letter describing what they have learned about themselves in treatment. Participants are encouraged to write about their strengths and how such strengths will continue to help them moving forward in their lives.

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