THE INFLUENCE OF SOCIAL CAPITAL ON ADOLESCENT SUBSTANCE USE TREATMENT PARTICIPATION

by

ELIZABETH DIANNE JOSEPH

Bachelor of Science, 2019

Louisiana State University

Baton Rouge, Louisiana

Submitted to the Graduate Faculty of the

College of Science and Engineering

Texas Christian University

in partial fulfillment of the requirements

for the degree of

Master of Science August 2021

ACKNOWLEDGEMENTS

I would like to express my gratitude to Dr. Kevin Knight for providing me the opportunity to study at the Institute of Behavioral Research and for his time and guidance throughout this process. I would also like to thank Drs. Danica Knight, Jenny Becan, and Yang Yang for providing me with invaluable research experience and inspiration.

I also want to thank the entire team at the Institute of Behavioral Research, particularly my fellow graduate students: Amanda Wiese, Thomas Sease, Lillyan Shelley, and Stephanie Villaire. Thank you for your advice and friendship.

Lastly, I wish to dedicate this manuscript to my family, friends, and partner, David. This would not have been possible without the unwavering love and support I received from each of you.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

The Influence of Social Capital on Adolescent Substance Use Treatment Participation

Substance use (SU) remains a critical public health issue in the United States (Vigo et al., 2020). In 2018, an estimated 8.1 million people aged 12 or older had at least one illicit substance use disorder (SUD); of those, approximately 916,000 were under the age of 18 (Substance Abuse & Mental Health Services Administration; 2019). Numerous treatment programs (e.g., ecological family-based treatment, individual cognitive-behavioral therapy, & group cognitive-behavioral therapy) have demonstrated effectiveness in the treatment of adolescent SUD and further promotion of subsequent SUD recovery (Hogue et al., 2018). Furthermore, adolescents who receive treatment for a SUD are less likely to relapse as adults (D'Amico et al., 2005). Receiving treatment is critical for SUD recovery, however enrolling and retaining adolescents in SU treatment remains a challenge for service providers (Acevedo et al., 2020; Hser et al., 2001).

Given the large proportion of adolescents that meet the clinical criteria for treatment, addressing the difficulties providers face in enrolling and retaining youth in SUD treatment is critical. Based on the 2015 National Survey on Drug Use and Health, approximately 1.3 million adolescents were in need of SU treatment, yet only 80,000 received it (Lipari et al., 2016). While treatment enrollment is a key part of the challenge, successful treatment requires that adolescents engage in treatment and remain in the program. This is exemplified by Simpson and colleague's (1995) study on client engagement during the early stages of SU treatment. In a sample of over 500 individuals in outpatient SU treatment, the researchers found that session attendance and positive interactions between clients and counselors predicted desirable behavioral changes. This relationship is crucial, as studies have established the importance of treatment retention in predicting favorable post-treatment outcomes (Hser et al., 2001; Simpson et al., 1997).

Treatment Engagement and Retention

As illustrated in the Texas Christian University (TCU) Treatment Process Model (Simpson, 2000), key targets for achieving positive change are the underlying support systems influencing treatment engagement and retention. Moreover, client characteristics impact motivation for treatment, and motivation for treatment in turn influences early engagement (Hiller et al., 2002). Early engagement in treatment then predicts treatment retention. This dynamic relationship is determinative, as treatment retention predicts post-treatment outcomes such as likelihood for relapse. Furthermore, differential components of treatment engagement have been found to predict treatment outcomes, including abstinence from SU, time in treatment, and relapse occurrence (Andersson et al., 2018; Manning et al., 2017).

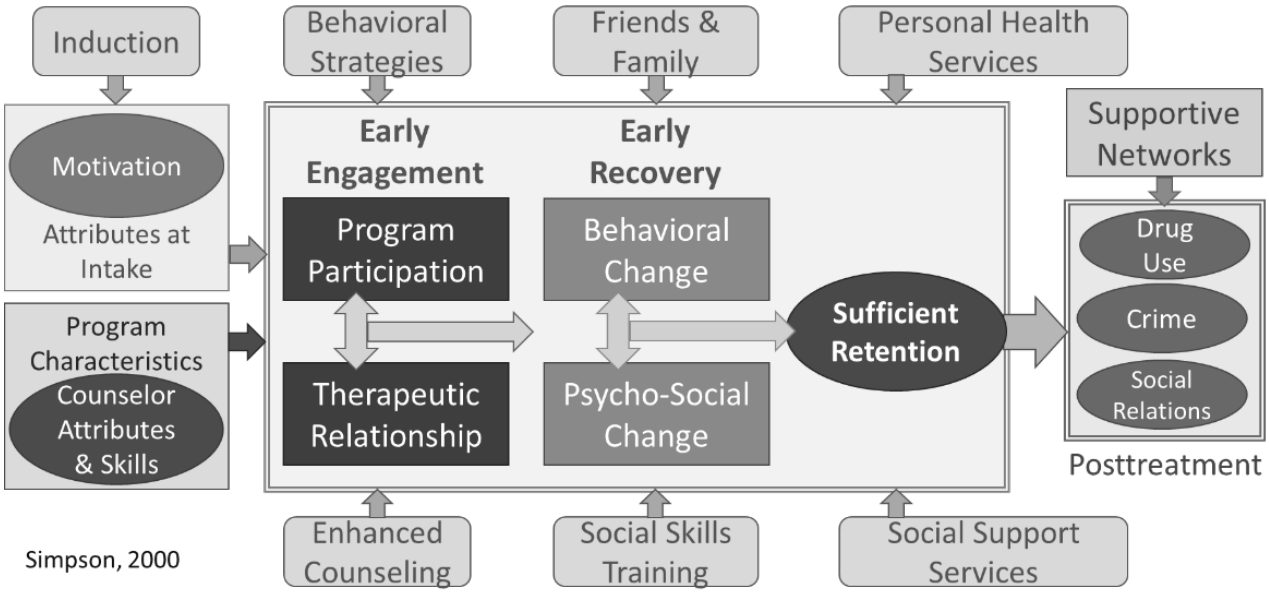

Figure 1. The TCU Treatment Process Model (Simpson, 2000). Model depicting the treatment process.

Based on this model, there are four key components that serve as indicators of treatment engagement: treatment satisfaction, treatment participation, counselor rapport, and peer support (Joe et al., 2002). Treatment satisfaction refers to how content a client is with their treatment

experience. Greater reported treatment satisfaction has been found to consistently predict less instances of relapse following treatment, greater time spent in treatment, and higher rates of treatment completion in adults (Andersson et al., 2017; Barbosa et al., 2012; Carlson & Gabriel, 2001). Similarly, treatment participation refers to one's active involvement in their treatment sessions. To maximize a SU treatment program's efficacy, clients should actively engage in their treatment and be open to communicating with their counselors in sessions. This can be achieved by attending prescribed treatment sessions, responding thoughtfully and honestly to treatment providers, and learning new strategies to address SU problems (Broome et al., 1999; Littell et al., 2001; Moos & King, 1997). The TCU Treatment Process Model (Simpson, 2000) indicates that program or treatment participation is a key driver of behavioral change and retention. Research is needed on these factors to further understanding of the process. Although there is a wide breadth of research on adults' levels of treatment participation, less research has examined how treatment satisfaction and participation impact treatment outcomes among adolescents.

Collectively, treatment satisfaction and participation both capture general aspects of clients' treatment experience, whereas counselor rapport and peer support refer specifically to social relationships within treatment. Counselor rapport describes the level of openness, trust, and non-judgement in one's relationship with their treatment provider. This relationship is essential to treatment success, as perceived unsupportiveness from treatment counselors has been identified as a primary reason for adolescents' early departure from residential treatment (Marchand et al., 2019). Nordheim and colleagues (2018) conducted qualitative interviews with young adults between the ages of 19 and 29 who left residential SU treatment early and found that participants disclosed a desire for closer contact with the staff during treatment as one of the primary reasons for leaving the treatment facility; this finding highlights clients' need for strong

rapport with their counselors. Likewise, a qualitative study that utilized focus groups comprised of youth, caregivers, and treatment providers indicated that genuine, compassionate facility staff were viewed as the most important component of youth-friendly mental health services (Hawke et al., 2019).

The support a person feels from their peers in treatment has also been linked with enhanced treatment engagement and post-treatment outcomes. For example, strong bonds formed with fellow peers and support groups within treatment have been associated with positive treatment outcomes, such as improved treatment retention and lessened SU severity following treatment (Gogel et al., 2011; Kendra et al., 2015). This is especially true for adolescents enrolled in residential SU treatment, as their contact with peers outside of treatment is limited. A qualitative study revealed the duality of in-treatment peers; the study found that in-treatment peers could serve as positive role models and increase one's comfort level, while a lack of peers in treatment contributed to feelings of loneliness, intimidation, and instances of conflict with others (Neale et al., 2018).

Successful treatment engagement also requires consideration of individual client characteristics, such as the developmental changes that occur during adolescence. Adolescence is a critical time for physical and cognitive development, with dramatic changes accompanied by increased personal freedom (Steinberg & Morris, 2001). One neurological change during adolescence takes place within the inhibitory system; these changes heighten reward sensitivity and desire for novelty, which in turn can contribute to risky behavior (Griffin, 2017). The prefrontal cortex, or area of the inhibitory system primarily responsible for planning and self-regulation, is still developing during adolescence and may impact adolescents' ability to consider the long-term consequences of their behavior (Seginer, 2003). For example, studies have found

that the presence of a same-age peer increases adolescents' risky behavior (Breiner et al., 2018). The effects of these developments are evident in many aspects of adolescents' lives and may affect SU treatment engagement as well.

Static and Dynamic Risk Factors

In line with the TCU Treatment Process Model (Simpson, 2000), providing treatment that promotes satisfaction, participation, counselor rapport, and peer support requires individualizing treatment plans that meet clients' specific needs. One way to do this is by framing the treatment plan on the Risk-Need-Responsivity model, where enrolling and retaining adolescents in effective treatment requires an understanding of an individual's risk level, needs, and abilities (Andrews et al., 2007), and then using this information to determine the optimal types and levels of services. This process includes gaining an understanding of static and dynamic treatment targets.

An understanding of static factors that are immutable to change, such as age and gender, are important to consider when tailoring treatment delivery. It is important to note that these factors cannot be altered through treatment intervention but may have an important impact on how the individual responds to the intervention. For example, race and ethnicity are static factors that can influence dynamic aspects of SU treatment. Cultural differences, which are influenced by race and ethnicity, among families have been found to impact adolescents' SU initiation and treatment, particularly within Black and Hispanic families (Johnson et al., 2019; Telzer et al., 2014; Werner et al., 2020). Another example of a static factor influencing a dynamic factor can be found within ethnicity and peers. Research has found that the influence of deviant peers on Hispanic adolescents' negative behavior, including SU initiation, was reduced more by their parents' support compared to their non-Hispanic counterparts (Frauenglass et al., 1997).

Likewise, another study found that parental support can influence Hispanic adolescents more than their peers, as compared to white adolescents (Coombs et al., 1991).

Similar results have been found within Black adolescents, with Black adolescents reporting less peer pressure and more familial influence than White adolescents (Giordano et al., 1993). The static factors of race and ethnicity also have implications for treatment engagement and completion; specifically, Black and Hispanic adolescents are less likely to complete SU treatment as compared to White adolescents (Arndt et al., 2013). For example, Marotta and colleagues (2020) examined the influence of race and ethnicity on outpatient SU treatment referrals and attrition. In a sample of over 70,000 adolescents, Black and Hispanic adolescents were more likely to drop out of treatment due to incarceration or expulsion from the facility.

Gender, another static risk factor, may also differentially influence SU and SU treatment engagement. In study conducted by Knight and colleagues (2014), adolescent males reported higher self-esteem and decision making and lower anxiety and depression than their female counterparts. Additionally, males reported higher family functioning and peer socialization than were reported by female adolescents. Primarily, the research on gender and SU has focused on SU initiation and SUD prevalence (Brady & Randall, 1999), yet few studies have examined how treatment engagement may vary across genders (McHugh et al., 2018). One of the few studies to do so assessed over 2,000 male and female inmates in multiple prison-based SU treatment programs. The researchers found that female inmates reported higher treatment engagement when compared to their male counterparts, with females also reporting higher treatment participation and counselor rapport. However, the sample in the study exclusively consisted of incarcerated adults, thus limiting its generalizability to adolescents (Stanton-Tindall, 2007).

It is important to note that dynamic factors are fluid and can be addressed through therapeutic intervention. Thinking skills, motivation, and family and peer relationships are examples of dynamic factors that can be targeted in SU treatment as a mechanism of change (Hogue et al., 2018). Family and peer relationships, in particular, represent a key target for adolescent SU treatment, as adolescents are typically both under the care of parents or guardians and highly sensitive to their peers' approval (Lee et al., 2017; Smetana & Rote, 2019). While dynamic factors can be targeted through intervention, static factors impact these dynamic factors and also should be considered during treatment.

Family and Peer Relationships

During adolescence, relationships are of paramount importance. These relationships influence many different areas of adolescents' lives (Bryce et al., 2019; Fletcher & Sindelar, 2012; Fosco et al., 2019; Malonda et al., 2019), including SU initiation and avoidance. A large proportion of SU research has been devoted to determining what family characteristics predict adolescent SUDs; specifically, high family hostility, low familial harmony, and low parental control are three common predictors of adolescent SUDs (Barnes et al., 2006; Johnson & Pandina, 1991). Additionally, previous studies have found a positive relationship between family engagement and adolescents' engagement in treatment (Thompson et al., 2007; 2009). However, more information about the impact of family characteristics on adolescent SU treatment engagement is needed.

Family warmth, conflict, and control have been implicated in the prediction of adolescent SUDs, yet little is known about if and how these factors affect treatment engagement. Family warmth is a construct that describes the support, love, and care an individual receives from their family members. This concept is prevalent throughout the literature on adolescents, as family

warmth is consistently related to adolescent psychosocial well-being (Franck & Buehler, 2007; Hoskins, 2014; Zheng & McMahon, 2019). As it pertains to SU, familial warmth can also serve as a protective factor against SU and other risky behaviors (Daspe et al., 2019).

Family conflict refers to the level of arguments, fights, and violence typical of the family. Similar to family warmth, family conflict is often studied among adolescents (Cummings et al., 2015; Formoso et al., 2000; Mechanic & Hansell, 1989). Heightened levels of conflict within the family have been found to predict poor adolescent psychosocial functioning; for example, high family conflict predicts increased stress, anxiety, and depression amongst adolescents (Ingram et al., 2020; Streit et al., 2020). Conflict within the family unit has also been implicated in adolescents' SU initiation, level of peer influence, and association with deviant peers (Ary et al., 1999; Guo et al., 2002; Herrenkohl et al., 2012).

Family control describes the level of parental control, rules, and consequences that are present in the family. At both ends of the spectrum, markedly high family control is associated with adolescents' adjustment problems and low self-confidence, whereas low family control is associated with delinquency, poor academic achievement, and earlier SU initiation (Conger et al., 1997; Melotti et al., 2018; Rusby et al., 2018). Contrary to these findings, other studies report that moderate to high levels of family control predict lower delinquency and academic achievement (Barnes & Farrell, 1992; Kapetanovic et al., 2019). There is, however, a lack of research on how family control relates to treatment engagement.

Similarly, peers exert a strong influence on adolescents' behavior. The hormonal and neurological changes adolescents undergo heighten their desire for peer approval (Caskey & Anfara, 2014). A recent lab study also indicated that adolescents are most susceptible to the influence of their peers when in unfamiliar or uncertain situations (Van Hoorn et al., 2017).

Thus, the characteristics and behaviors of adolescents' peers correspond to their own behavior. For instance, having peers who engage in SU is a robust predictor of adolescent SU initiation and subsequent SUDs (Andrews et al., 2002; Tompsett et al., 2013; Trucco, 2020). Additionally, in a 2016 study, approximately 33% of adolescents with self-reported opioid misuse reported that they typically procured opioids from friends and relatives (Hudgins et al., 2019). In contrast, having peers who do not engage in SU is associated with adolescent SU avoidance and SUD recovery (Andrews & Hops, 2010).

Peers can serve as a positive or negative influence on adolescents, as further exemplified by peer socialization and peer trouble. Peer socialization refers to a person's involvement with peers who do well in school, wish to remain in school, and are involved in extracurricular activities. There is considerable support for the influence of adolescents' peers on prosocial behavior (Barry & Wentzel, 2006; Van Hoorn et al., 2016; Wentzel & Muenks, 2016). Additionally, attitudes towards school and academic achievement among peers are often indicative of an adolescent's own feelings and achievement, as adolescents' academic attitudes and achievement are highly similar to those they consider their close friends (Berndt et al., 1990; Dawes, 2017). Having peers who value academic success and who have plans to remain in school can positively promote adolescents' SU avoidance (Levy et al., 2018).

In contrast to peer socialization, peer trouble represents the level to which one is involved with peers who break the law, drop out of school, and engage in SU. The association between adolescents' involvement with deviant peers and delinquency is well-established (Lansford et al., 2014; Wojciechowski, 2018; Yoon et al., 2019). Of particular interest is the association between SU among close peers and the adolescents' own SU; consistently, adolescents' SU is influenced by their peers' usage (Li et al., 2017; Mason et al., 2017). Schuler

and colleagues (2019) provided further evidence of this in their longitudinal study of approximately 12,000 adolescents. Over five years, the participants reported their SU frequency, as well as their perceptions of their family and closest friends' usage. Across the five years, adolescents' SU and perceived usage among their closest friends was the strongest positive association as compared to adult family members and same-age family members. Additionally, having deviant peers is identified as a barrier to both treatment initiation and engagement (Mensinger et al., 2006; Stringer & Baker, 2018).

Social Capital

Conceptually, a major driver of treatment engagement is having established recovery capital. **"**Recovery capital is a framework for SU recovery that refers to an individual's strengths and external resources that can aid them through the recovery process and in abstaining from SU" (Best et al., 2012). According to Cloud and Granfield (2008), recovery capital is comprised of physical capital, human capital, cultural capital, and social capital; taken together, these unique components positively contribute to an individual's treatment process and SU recovery.

Collectively, family and peer relationships can contribute to, or detract from, an adolescent's social capital and serve as a key dynamic factor in achieving desired behavioral change. Social capital, a part of recovery capital (Best et al., 2012), is comprised of a person's social supports, such as their family and close friends, that can be relied upon throughout recovery. Additionally, social capital reflects the individual's engagement with their respective communities and groups. This relationship is integral to treatment success, as prior research has indicated that greater social capital predicts lower rates of SU relapse following treatment (Boeri et al., 2016; Mawson et al., 2015). Social capital is critical to SU recovery in all populations, but it may play an even larger role in adolescents' SU recovery. Adolescents are still developing and

typically rely upon their family to advise and support them as they mature; however, adolescents are highly susceptible to the influence of their peers.

Together, adolescents' relationships with their families and peers have the potential to enhance or impede their efforts to seek treatment for SU and to ultimately recover from SUD. Developing a thorough understanding of the influence of family and peer relationships on adolescent treatment engagement is necessary to more effectively address the treatment needs of adolescents. Therefore, understanding the unique influence of adolescents' peers and families is critical to successful SU treatment.

Hypotheses

There are two primary goals for this study: (1) to establish a model of adolescent SU treatment engagement predicted by family and peer relationship factors, and (2) to evaluate the model across races, ethnicities, and gender to determine if and how these static factors influence the dynamic factors of family and peer relationships and subsequent treatment engagement. Specifically, it is hypothesized that the familial characteristics of family control, family warmth, and family conflict, and the peer factors of peer socialization, peer to family relations, and peer trouble will differentially influence adolescents' level of SU treatment engagement. Specifically, it is expected that greater family warmth, family control, peer socialization, and peer to family relations will predict greater treatment engagement, whereas higher family conflict and peer trouble will predict less treatment engagement. Although it is predicted that the structural model assessed in this study will be theoretically consistent across races, ethnicity, and gender groups, it is hypothesized that group-level differences will emerge. Specifically, it is hypothesized that positive treatment engagement among females will be directly associated with positive peer

factors. It also is hypothesized that within Non-White and Hispanic adolescent groups, supportive familial characteristics will predict positive treatment engagement.

Method

Participants

The study sample is comprised of participants from the Treatment Readiness and Induction Program for Adolescents (TRIP) project conducted from 2011-2013 (Knight et al., 2016). The sample includes data from 896 adolescents, recruited from five community-based residential SU treatment centers. Participant ages ranged from 13 to 19 years old (M = 15.84, SD = 1.08). The participants were predominantly male, with males comprising 68% of the sample. The sample was 39.8% White and 5.5% Black; additionally, 68.4% of the sample identified as Hispanic. All of the youth had a SUD, as indicated by their scores on the Texas Christian University Drug Screen II (TCU DS-II; M = 13.79; SD = 2.62); furthermore, approximately 30% of the sample reported that their use of marijuana/hashish was the primary substance responsible for their SU problems (n = 267).

Intervention

The TRIP intervention was designed to improve adolescents' motivation for SU treatment by developing their critical thinking skills and their ability to identify factors that influence their thinking (Bartholomew et al., 2013). The curriculum is intended to be administered in a group setting during treatment induction, and utilizes mapping-enhanced counseling, processing activities, and peer facilitation. The TRIP intervention has been found to increase adolescents' SU problem recognition, desire for help, and readiness for SU treatment compared to standard treatment (Becan et al., 2015). The TRIP intervention curriculum includes modules on (1) Mapping (i.e., graphically enhanced analytic processing tool), (2) Nudges (i.e.,

identifying, developing, and using cues and signals to enhance metacognition), (3) Downward Spiral (i.e., understanding the consequences of poor decision making through the use of an experiential board game), and (4) "WORK-IT" (i.e., repetitive use of structured maps or templates to foster development of a coherent schema to enhance decision making).

Measures

The data were collected at three time points: at baseline upon entry to the residential treatment facility and before receipt of the TRIP intervention (Time 1), during the intervention delivery between Days 30 and 45 (Time 2), and at Day 90 after the intervention delivery (Time 3). At Time 1, background information, family dynamics, and SU severity were measured. The treatment engagement measures were administered at Times 2 and 3. See appendices for the measures and their respective items.

Background information. The TCU Adolescent Risk Form A (TCU ADOL RSKForm A; Joe et al., 2002) is a 15-item measure that collects demographic information, such as age, gender, race, and ethnicity (see Appendix A).

Substance use severity. The TCU Drug Screen-II (TCU DS-II; Knight et al., 2014) is a 15-item survey designed to measure SU severity within adolescent and adult populations (see Appendix B). The scores are calculated by summing the responses for items 1-9, with total scores ranging from 0-18. Questions 10-15 are not used in calculating the final score; rather, these questions can be used to further inform treatment decisions. A score of 12 or more signals a severe SUD.

Family and peer dynamics. The TCU Adolescent Friends, Family, and Self Form (TCU ADOL FFS; Simpson & McBride, 1992) was used to measure family and peer functioning through 35 items nested within six dimensions: Family Warmth ($\alpha = .91$; e.g., "You have family

who make you feel loved"), Family Control (α = .74; e.g., "There are clear rules in your family that you have to follow"), Family Conflict (α = .77; e.g., "There are lots of arguments or fights in your family"), Peer Trouble (α = .86; , e.g., "You have friends who have been in trouble because of alcohol or drug use"), Peer to Family Relations (α = .77; e.g., "Most of your friends like your parents"), and Peer Socialization (α = .73; e.g., "Your friends usually get passing grades in school or have regular jobs") (see Appendix C). Each of the scales demonstrates acceptable psychometric properties (αs ≥ .73). Responses are given on 5-point Likert scale (1 = *Disagree Strongly* to 5 = *Agree Strongly*).

Treatment engagement. The TCU Adolescent Treatment Engagement Form (TCU ADOL ENG Form; Simpson et al., 1995) was administered at Times 2 and 3 (see Appendix D). The TCU ADOL ENG Form includes 36 items from four scales: Treatment Participation (α = .92; e.g., "You are willing to talk about your feelings during counseling"), Treatment Satisfaction (α = .82; e.g., "This program is organized and well-run"), Counselor Rapport (α = .94; e.g., "Your counselor is sensitive to your situation and problems"), and Peer Support (α = .82; e.g., "You have developed positive trusting friendships within this program"). Respondents are instructed to rate their answers on a 5-point Likert scale (1= *Strongly Disagree* to 5= *Strongly Agree*).

Analytic Plan

All four of the TCU ENG Form scales (i.e., Treatment Participation, Treatment Satisfaction, Counselor Rapport, and Peer Support) were intended originally to be used in the study; however sample size limitations restricted the model to including only one scale. Because of the research documenting the critical importance of treatment participation in achieving treatment retention and favorable outcomes, Treatment Participation was the TCU ENG scale

selected for inclusion in the analysis. As discussed in the literature review, treatment participation is the engagement factor most indicative of clients' active involvement with their treatment. Additionally, treatment participation has been found to predict treatment retention and successful treatment completion (Simpson et al., 1997). The present study's analyses proceeded in two phases. The first phase involved conducting exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) of the TCU ENG form Treatment Participation scale and TCU FFS form items, which informed the selection of factors to include in the hypothesized structural equation model (SEM). The criteria for the number of factors was eigenvalues greater than 1, the proportion of the variance the factors account for, and factor loadings. The second phase utilized the finalized SEM model to test the study's specific hypotheses separately. To test the specific hypotheses, the respecified model was run and respecified based on demographic groups (male, female, White, Non-White, Hispanic, and Non-Hispanic) to illuminate group-level differences of family and peer influences on treatment participation. The model was determined to have adequate fit if the following criteria was met: a Standardized Root Mean Square Residual (SRMR) less than .08 (Hu & Bentler, 1998), a Comparative Fit Index (CFI) greater than or equal to .80 (Fan et al., 1999), and a Root Mean Square Error of Approximation (RMSEA) no larger than .08 (Browne & Cudeck, 1989). A non-significant chi-square (X^2) value is often used to indicate satisfactory model fit; however, it is sensitive to large sample sizes. Therefore, a non-significant X^2 was not part of the current study's criteria for acceptable model fit.

Results

Descriptive. A large proportion of the sample was missing the primary outcome variable of treatment participation at 90 days of treatment, as many participants left treatment before Time 3 assessment occurred. Thus, Time 2 treatment participation data was used in the final

analyses instead of Time 3. However, the missing Time 2 outcome data reduced the number of Black participants from 55 to 10, thus prohibiting the development of a SEM model with exclusively Black participants. As a result, the Black sample was combined with the American Indian/Alaska Native, Asian, Native Hawaiian/Pacific Islander, more than one race, and other group to create an aggregate minority, or Non-White, group. See Table 1 for complete demographics.

Table 1

Demographics of Sample

	Male (*n* = 496)	Female (*n* = 336)
Age (mean; range)	15.8 (13-18)	15.7 (12-17)
Race (%)		
White	216 (41.5%)	110 (35.4%)
Black	14 (2.7%)	18 (5.8%)
Other	266 (55.8%)	175 (56.2%)
Hispanic (%)	344 (66%)	215 (69.1%)
TCU DS-II Score (mean; range)	13.4 (9-18)	14.2 (9-18)
Last school grade completed (mean; range)	9th (less than 6th- GED)	9th (less than 6th- 12th)

Exploratory Factor Analysis. Initial analyses were conducted to confirm that the factor solutions previously specified for the instruments were appropriate for the current sample using a random split exploratory factor analysis (EFA) and a random split confirmatory factor analysis (CFA). Additionally, the initial analysis was conducted to confirm that the assumptions for SEM were met, including data normality, data independence, homoscedasticity, and the absence of multicollinearity.

The randomized split resulted in two split data sets of 386 and 446 participants. Principal components analysis (PCA) with varimax rotation was performed using SPSS version 27.0 (IBM Corp, 2020) on 12 items from the Treatment Participation scale of the TCU ENG form. The initial eigenvalues found that the first component explained 54.40% of the variance, while a

second component explained 6.65% of the variance. The only item loading on the second component was item 36 ("Other clients at this program make it hard for you to focus on your treatment."). The reliability statistics for the items were then examined to determine the effect of dropping the item. The reliability statistics indicated that removing item 36 would increase the scale's reliability from $a = .90$ to $a = .93$. Therefore, item 36 was removed; the factor loadings can be found in Table 2.

Table 2

Factor Loadings from Treatment Participation Exploratory Analysis

Items	Factor Loading
6. You are willing to talk about your feelings during counseling.	0.73
9. You have made progress with your drug/alcohol problems.	0.71
11. You have learned to analyze and plan ways to solve your problems.	0.76
12. You have made progress toward your treatment program goals.	0.84
13. You always attend the counseling sessions scheduled for you.	0.76
20. You have stopped your drug use while in this program.	0.76
22. You always participate actively in your counseling sessions.	0.79
23. You have made progress in understanding your feelings and behavior.	0.85
25. You have improved your relations with other people because of this treatment.	0.73
28. You have made progress with your emotional or psychological issues.	0.78
31. You give honest feedback during counseling.	0.75

Using the same subsample, an EFA was also conducted for the TCU FFS form. Principal components analysis with oblimin rotation was performed using SPSS version 27.0 (IBM Corp, 2020) on 35 items from the TCU FFS in a sample of 386 participants. The initial eigenvalues found that the first seven components explained 20.89%, 14.63%, 9.26%, 7.50%, 4.06%, 3.58%,

and 3.04% of the variance. However, the seventh component had an eigenvalue barely over one. Additionally, the items from the peer-to-family scale, Item 31 ("Your family members hit each other"), Item 14 ("Your family often sits down to eat together at the same time"), and item 2 ("Your parents often make decisions for you") had low factor loadings (i.e., less than .30) and were subsequently removed. Following their removal, a five-factor solution emerged. The final factor loading matrix can be found in Table 3.

Table 3
Factor Loadings from TCU FFS Form Exploratory Analysis

Scale Items	Factor Loading
Family Warmth	
17. You have family who make you feel loved.	0.78
18. Your parents often tell you they love and care for you.	0.82
19. You have parents who understand you.	0.76
20. Your parents pay attention to what you say.	0.79
23. Your family is helpful and supportive when you get discouraged.	0.79
29. When you have a problem, your family will stand by you.	0.75
Family Control	
9. Your parents let you go where you please without asking. ®	0.66
13. You have more rules in your family than do your friends.	0.71
25. There are family punishments when you do something wrong.	0.72
28. There are clear rules in your family that you have to follow.	0.71
32. Your parents let you off easy when you do something wrong. ®	0.63
Family Conflict	
4. There are lots of arguments or fights in your family.	0.73
8. Members of your family often get really mad at one another.	0.81
11. Members of your family talk badly about each other.	0.79
27. Your family members often yell at each other.	0.76
Peer Trouble	
3. You have friends who have dropped out of school.	0.65
5. You have friends who have been in trouble because of alcohol or drug use.	0.63
10. You have friends who have damaged other people's property.	0.69
12. Your friends do things that can get them into trouble with the law.	0.70
24. You have friends who have been stopped or picked up by the police.	0.71
30. You have friends who are in gangs of some type.	0.77
35. You have friends who have used a weapon (gun, knife, or club) in a fight.	0.77
Peer Socialization	
1. Your friends usually get passing grades in school or have regular jobs.	0.59
7. Your friends like to play sports.	0.62
15. You have friends who often volunteer time to help others.	0.65
21. Your friends usually study, read, or do homework most days.	0.75
22. Most of your friends want to complete more school.	0.81
34. You have friends who want to go to college.	0.77

Confirmatory Factor Analysis. The second subsample was used to conduct two CFAs in Mplus on the Treatment Participation scale and TCU FFS form to further validate the model tested based on the previously conducted EFA. For both CFAs, maximum likelihood (ML) estimator was used to estimate the model parameters and fit indices. Regarding the Treatment Participation scale, the model displayed acceptable fit, $\chi 2$ (32) = 158.98, $p < .001$, CFI = .95, RMSEA = .08 (.08, .11), SRMR = .04. For the TCU FFS form, the five-factor solution model was tested as suggested by the prior EFA results. The initial model also displayed acceptable model fit, $\chi 2$ (336) = 629.24, $p < .001$, CFI = .94, RMSEA = .05 (.04, .05), SRMR = .06.

Hypothesized Model. Structural equation modeling (SEM) was then used to test a model (see Figure 2) of adolescent treatment participation predicted by family and peer characteristics. Specifically, it was hypothesized that family warmth, family control, family conflict, peer socialization, and peer trouble would predict adolescents' treatment participation whilst controlling for SU severity and intervention receipt. Family warmth, family control, and peer socialization were hypothesized to positively predict treatment participation, while family conflict and peer trouble were hypothesized to negatively predict treatment participation.

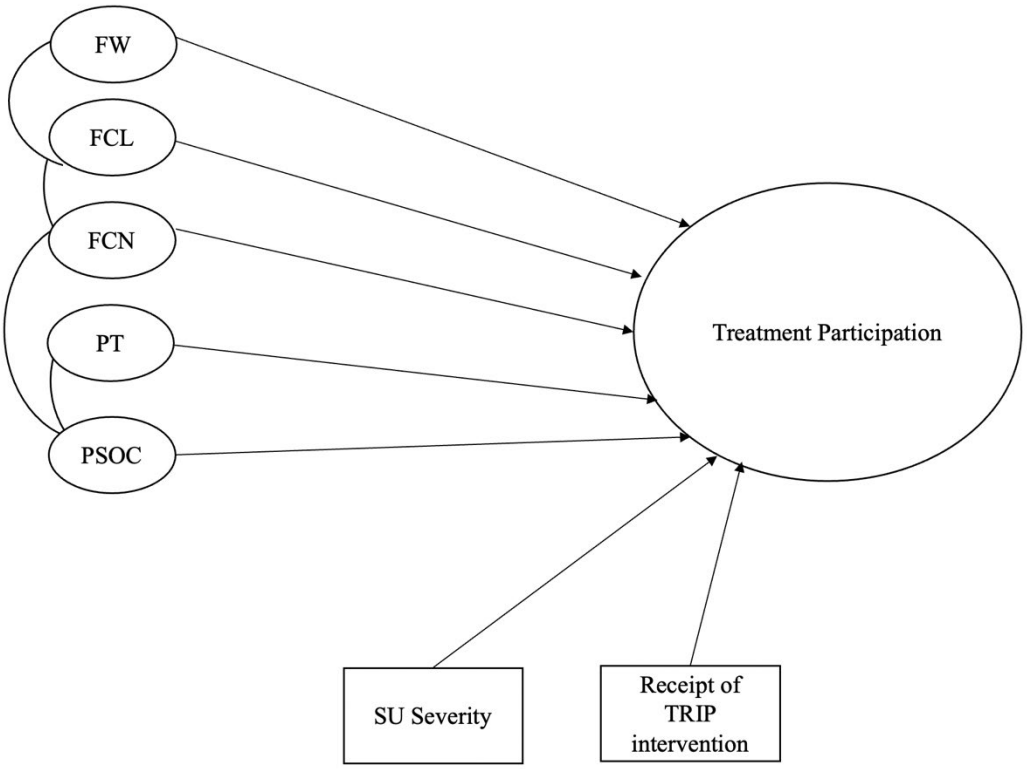

Figure 2. The Hypothesized Model for the Total Sample. The figure illustrates the hypothesized structural equation model of the effect of family and peer influences on treatment participation for the total sample. Note: FW = Family Warmth, FCL = Family Control, FCN = Family Conflict, PT= Peer Trouble, PSOC = Peer Socialization.

Structural Equation Modeling. The initial model was run with all of the hypothesized predictors including family warmth, family control, family conflict, peer socialization, and peer trouble; using weighted least square mean (WLSMV) estimation. The initial model (N = 283) met the criteria for acceptable fit, $\chi2$ (787) = 1149.22, $p < .001$, CFI = .82, RMSEA = .04 (.04, .05), SRMR = .06. Four of the five pathways to treatment participation, family warmth (b = .26 (SE = .12), t = 2.18), family control (b = .47 (SE = .09), t = 5.15), peer socialization (b = .26 (SE = .09), t = 2.78), peer trouble (b = .23 (SE = .10), t = 2.18), were significant (ps ≤ .03). The non-significant pathway and correlations were removed, resulting in a model with slightly improved

fit, $\chi 2$ (641) = 958.27, $p < .001$, CFI = .84, RMSEA = .04 (.04, .05), SRMR = .06. Again, the four pathways to treatment participation, family warmth (b = .25 (SE = .11), t = 2.26), family control (b = .46 (SE = .09), t = 5.05), peer socialization (b = .23 (SE = .09), t = 2.49), peer trouble (b = .23 (SE = .10), t = 2.36), were significant (ps ≤ .02). See Figure 3.

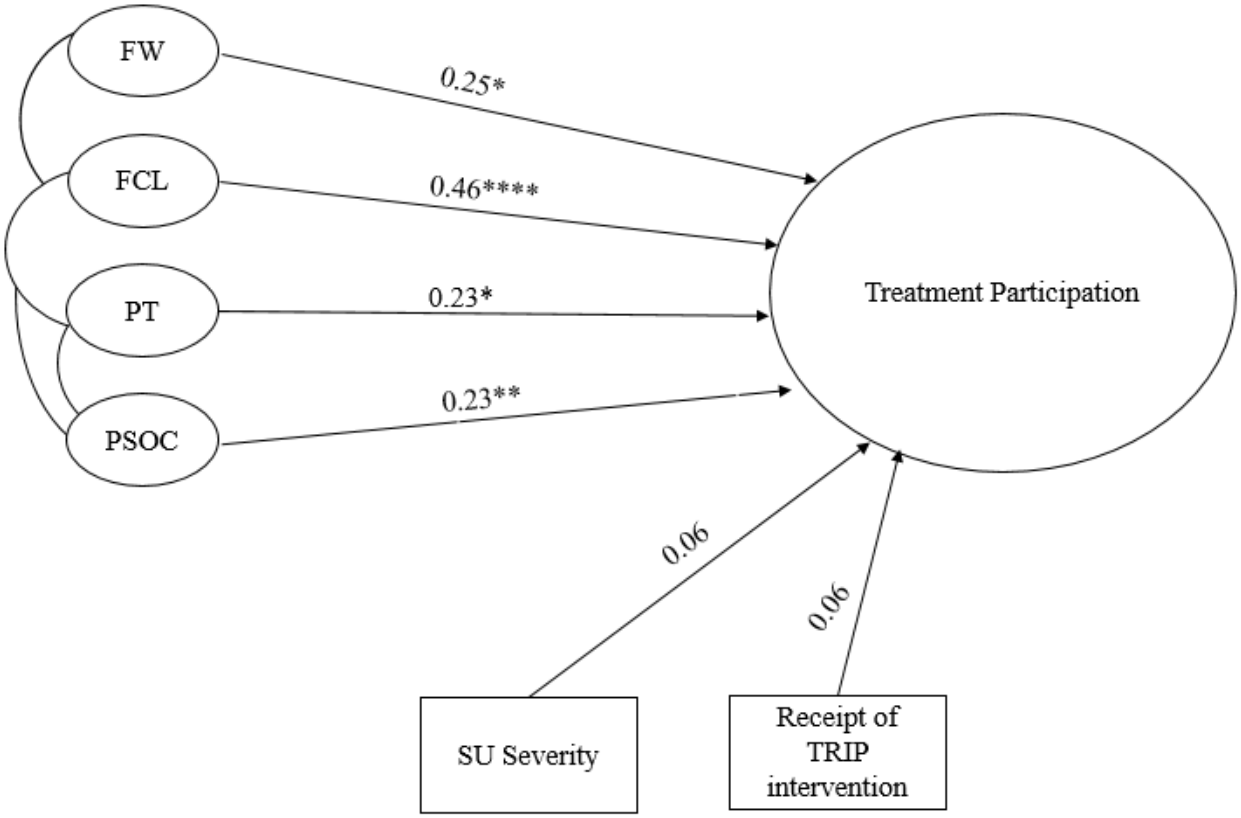

Figure 3. The Final Model for the Total Sample. The figure illustrates the structural equation model of the effect of family and peer influences on treatment participation for the total sample. Note: FW = Family Warmth, FCL = Family Control, PT= Peer Trouble, PSOC = Peer Socialization; * $p < .05$, ** $p < .01$, *** $p < .005$, **** $p < .001$.

To compare model fit across demographic groups (i.e., Male vs. Female, White vs. Non-White, and Hispanic vs. Non-Hispanic), the respecified model was run for each comparison of interest. In the gender comparison, the model reached adequate fit, $\chi 2$ (1344) = 1701.74, $p <$

.001, CFI = .81, RMSEA = .04 (.04, .05), SRMR = .09. For males (n = 184), the pathways from peer trouble (b = .29 (SE = .11), t = 2.60), family warmth (b = .37 (SE =.11), t = 3.27), and family control (b = .53 (SE = .09), t = 5.88) to treatment participation were significant and positive (ps ≤ .009). However, the path from peer socialization was not significant (p = .117). The female group (n = 99) exhibited only one significant path, a positive link from peer socialization to treatment participation (b = .50 (SE = .22), t = 2.26, p = .02).

In the White vs Non-White comparison, the model exhibited adequate model fit, $\chi 2$ (1344) = 1649.61, p < .001, CFI = .81, RMSEA = .04 (.03, .05), SRMR = .08. In the Non-White group (n = 153), only family control (b = .40 (SE = .10), t = 3.98, p ≤ .001) to treatment participation was significant. However, both family control (b = .60 (SE = .21), t = 2.94, p = .003) and peer socialization (b = .43 (SE = .22), t = 2.01, p = .05) were significant in the group of White participants (n =120).

The final comparison was between Hispanic vs. Non-Hispanic participants. The model exhibited adequate fit, $\chi 2$ (1344) = 1698.74, p < .001, CFI = .81, RMSEA = .04 (.04, .05), SRMR = .09. In the exclusively Hispanic group (n = 283), the paths from family warmth (b = .41 (SE = .12), t = 3.45), family control (b = .48 (SE = .10), t = 5.03), peer trouble (b = .26 (SE= .11), t= 2.36), and peer socialization (b = .20 (SE = .10), t = 2.00) to treatment participation were significant (ps ≤ .05). However, none of the paths in the Non-Hispanic model (n = 189) were significant.

The full model was then run separately for each group so that the group-specific models could be optimized. In the all-male model (N = 184), the initial results found that three of the four pathways to treatment participation were significant (ps ≤ .009). As expected, the pathways from family warmth (b = .37 (SE = .12), t = 3.12), family control (b = .55 (SE = .09), t = 6.05),

and peer trouble (b = .31 (SE = .12), t = 2.61), to treatment participation were significant and positive (ps ≤ .01). The initial model showed acceptable model fit, $\chi 2$ (641) = 879.81, p < .001, CFI = .81, RMSEA = .05 (.04, .05), SRMR = .07. After removing the non-significant pathway of peer socialization, the model fit improved slightly, $\chi 2$ (447) = 660.28, p < .001, CFI = .82, RMSEA = .05 (.04, .06), SRMR = .07. The three pathways to treatment participation, family warmth (b = .37 (SE= .12), t = 3.12), family control (b = .55 (SE= .09), t =5.86), and peer trouble (b = .31 (SE= .12), t =2.60), remained significant (ps ≤ .02) (see Figure 3).

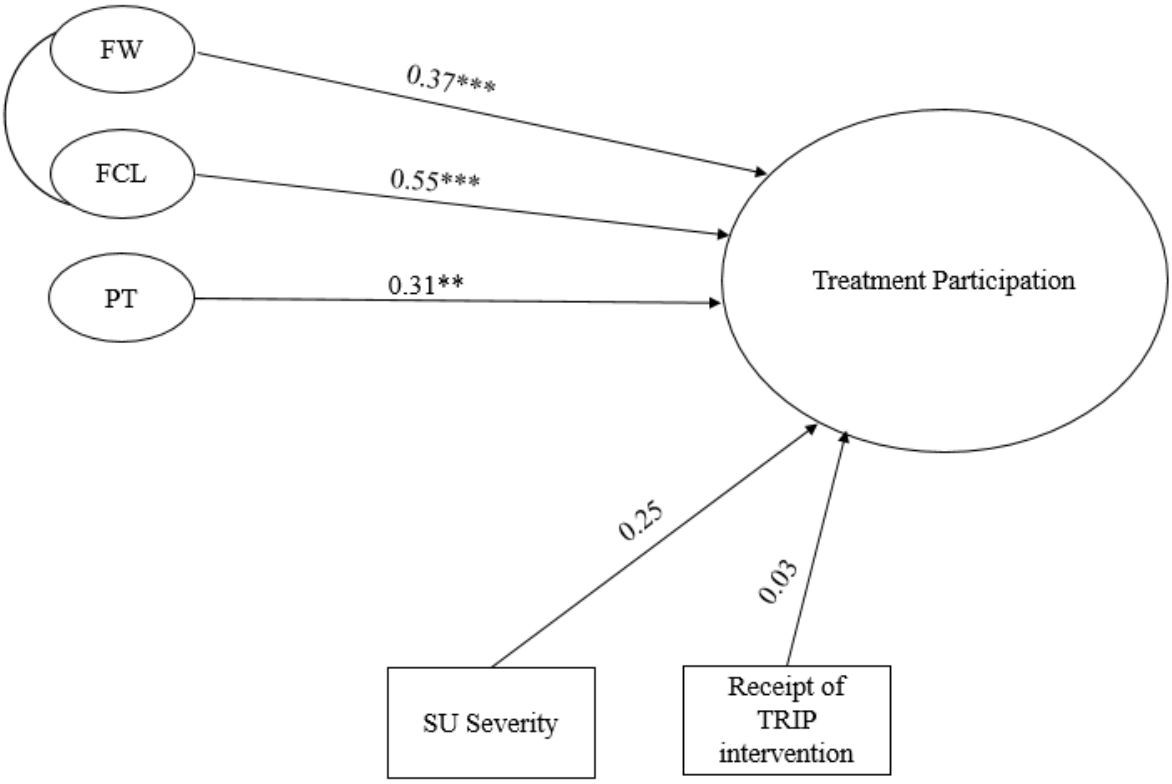

Figure 4. The Final Model for the Male Sample. The figure illustrates the structural equation model of the effect of family and peer influences on treatment participation for males.

Note: FW = Family Warmth, FCL = Family Control, PT= Peer Trouble; * p < .05, ** p < .01, *** p < .005, **** p < .001.

In contrast, the female model ($N = 99$) found that only one of the pathways to treatment participation was significant. The path from peer socialization to treatment participation was significant and positive ($b = .43$ ($SE = .19$), $t = 2.26$, $p = .02$). The model fit statistics indicated that the model did not meet the criteria for acceptable fit, $\chi2$ (641) = 762.74, $p < .001$, CFI = .78, RMSEA = .04 (.03, .06), SRMR = .09. Modification indices did not suggest any justifiable additional correlations. The removal of non-significant pathways still did not yield adequate model fit, $\chi2$ (165) = 264.64, $p < .001$, CFI = .79, RMSEA = .08 (.06, .09), SRMR = .08, while peer socialization remained significant and positive, ($b = .43$ ($SE = .19$), $t = 2.29$, $p = .02$).

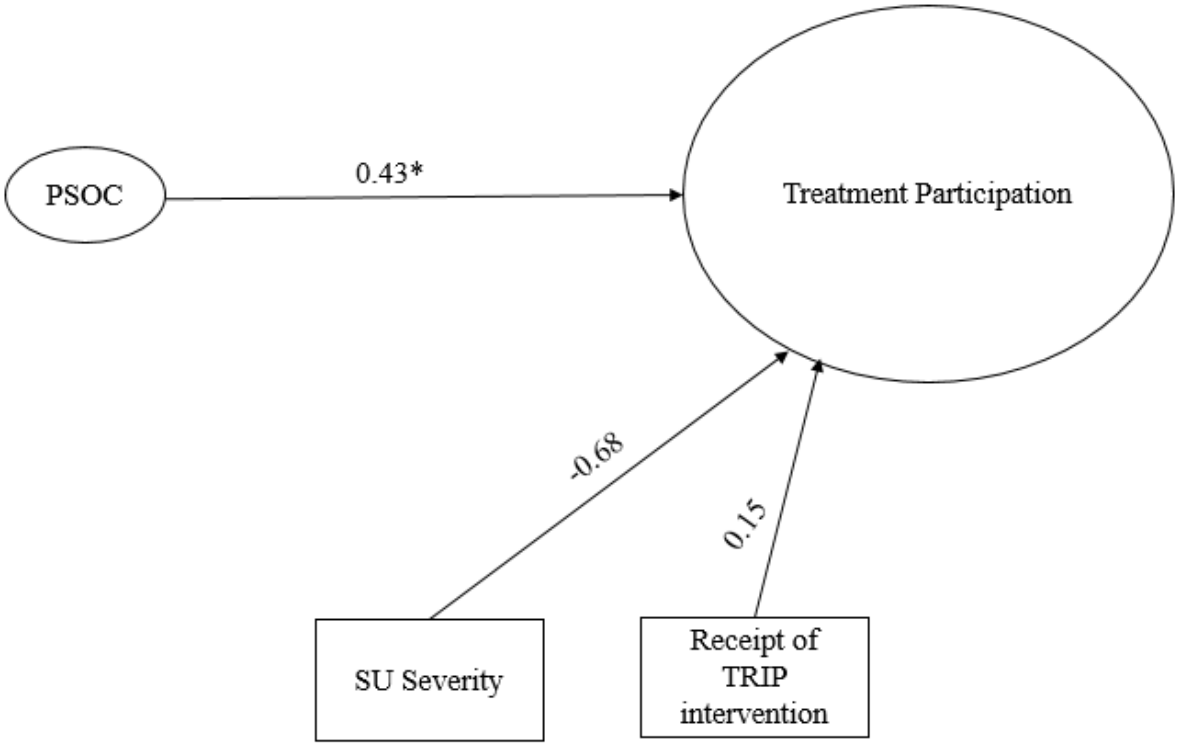

Figure 5. The Final Model for the Female Sample. The figure illustrates the structural equation model of the effect of family and peer influences on treatment participation for females.

Note: PSOC = Peer Socialization; * $p < .05$, ** $p < .01$, *** $p < .005$, **** $p < .001$.

As expected from the comparison model, the model with only White participants (N = 120) found that two of the four pathways to treatment participation, family control (b = .63 (SE = .21), t = 3.01) and peer socialization (b = .37 (SE = .19), t = 1.99) were significant (ps ≤ .05). The model fit statistics met the criteria for acceptable model fit, $\chi2$ (641) = 772.92, p < .001, CFI = .82, RMSEA = .04 (.03, .05), SRMR = .08. After removing non-significant pathways, the model fit improved, $\chi2$ (265) = 347.02, p < .001, CFI = .87, RMSEA = .05 (.03, .06), SRMR = .07, and family control (b = .60 (SE = .18), t = 3.24) and peer socialization (b = .31 (SE = .15), t = 2.03) remained positive and significant (ps ≤ .04).

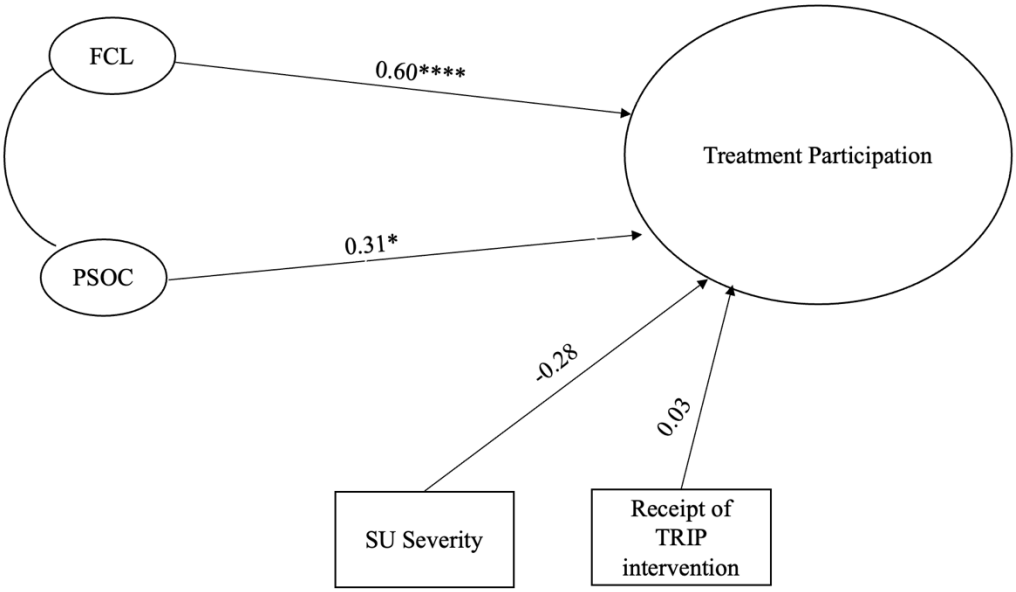

Figure 6. The Final Model for the White Sample. The figure illustrates the structural equation model of the effect of family and peer influences on treatment participation for the White sample. Note: FCL = Family Control, PSOC = Peer Socialization; * p < .05, ** p < .01, *** p < .005, **** p < .001.

The model with the Non-White group (N = 153) found that only the pathway from family control to treatment participation was significant (b = .25 (SE = .10), t = 3.96, p = .006). The

model did not meet the criteria for acceptable fit, $\chi 2$ (641) = 818.49, $p < .001$, CFI = .79, RMSEA = .04 (.03, .05), SRMR = .08. Non-significant pathways were then removed, resulting in a model with acceptable fit, $\chi 2$ (147) = 222.85, $p < .001$, CFI = .90, RMSEA = .06 (.04, .07), SRMR = .06, with family control still predicting treatment participation, (b = .25 (SE = .09), t = 2.76, p = .006).

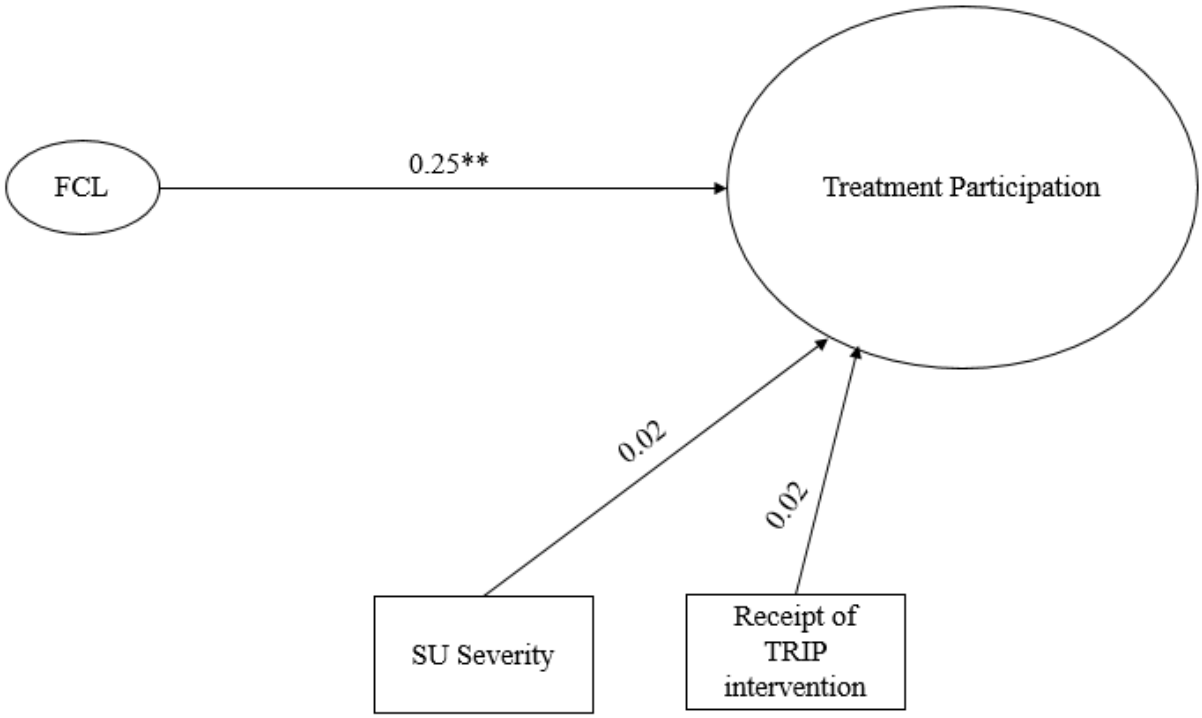

Figure 7. The Final Model for the Non-White Sample. The figure illustrates the structural equation model of the effect of family and peer influences on treatment participation for the Non-White sample. Note: FCL = Family Control; * $p < .05$, ** $p < .01$, *** $p < .005$, **** $p < .001$.

Within the Hispanic model (N = 189), all of the four pathways to treatment participation were significant. The paths from family warmth (b = .41 (SE = .12), t = 3.45, $p \leq .001$), family control (b = .48 (SE = .09), t = 5.13, $p \leq .001$), peer trouble (b = .27 (SE = .11), t = 2.39, p = .02), and peer socialization (b = .19 (SE = .10), t = 2.01, p = .04) to treatment participation were

significant and positive. The model did not meet the criteria for adequate model fit, $\chi 2$ (641) = 919.55, $p < .001$, CFI = .78, RMSEA = .05 (.04, .06), SRMR = .08. The non-significant correlations were removed, yet the respecified model still did not meet the criteria for acceptable fit, $\chi 2$ (642) = 920.65, $p < .001$, CFI = .78, RMSEA = .05 (.04, .06), SRMR = .08. The pathways to treatment participation, from family warmth *(b* = .40 (*SE* = .12), *t* = 3.45), family control (*b* = .48 (*SE* = .09), *t* = 5.13), peer trouble *(b* = .27 (*SE* = .11), *t* = 2.39), and peer socialization *(b* = .19 (*SE* = .10), *t* = 2.01), remained significant (*p*s ≤ .04).

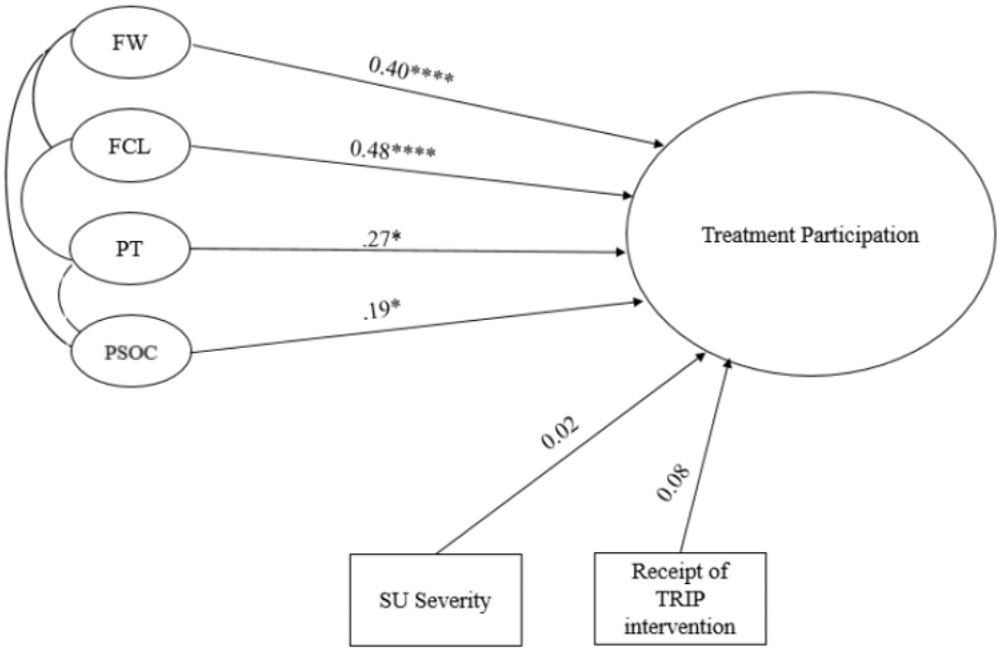

Figure 8. The Final Model for the Hispanic Sample. The figure illustrates the structural equation model of the effect of family and peer influences on treatment participation for the Hispanic sample. Note: FW = Family Warmth, FCL = Family Control, PT= Peer Trouble, PSOC = Peer Socialization; * $p < .05$, ** $p < .01$, *** $p < .005$, **** $p < .001$.

The final model examined treatment participation amongst Non-Hispanic participants (*N* = 94). As expected, the model indicated that none of the pathways to treatment engagement were

significant. The model fit statistics showed acceptable model fit, $\chi 2$ (643) = 710.09, $p < .001$, CFI = .87, RMSEA = .03 (.01, .05), SRMR = .09. However, no justifiable modifications were suggested; therefore, the initial model was retained.

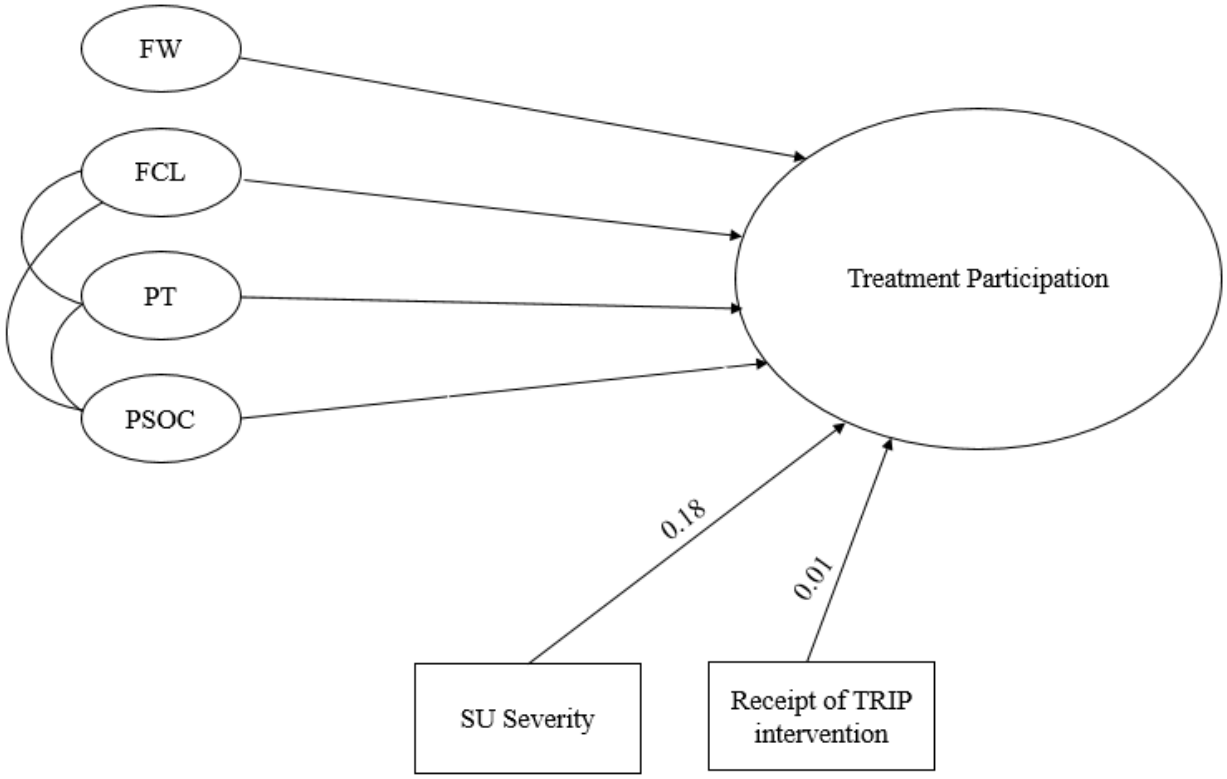

Figure 9. The Final Model for the Non-Hispanic Sample. The figure illustrates the structural equation model of the effect of family and peer influences on treatment participation for the Non-Hispanic sample. Note: FW = Family Warmth, FCL = Family Control, PT= Peer Trouble, PSOC = Peer Socialization; * $p < .05$, ** $p < .01$, *** $p < .005$, **** $p < .001$.

Discussion

The present study examined the manner in which adolescents' peers and families, or social capital, influenced SU treatment participation. As hypothesized, family control, family warmth, and peer socialization positively predicted adolescents' treatment participation. Alternatively, family conflict did not predict treatment participation. While peer trouble also predicted treatment participation, it did not predict it in the hypothesized direction. Instead, as peer trouble increased, treatment participation also increased. One explanation for this is that peer trouble positively predicted treatment participation due to the treatment context. The adolescents in this study were in residential treatment, wherein their contact with outside influences were restricted. Being separated from these peers who may have a negative influence on their behavior may have heightened their desire for SU treatment, thus increasing their participation.

Regarding the final hypotheses, the model fit was consistent across demographic groups, yet group-level differences were present. Females' treatment participation was predicted by exclusively by positive peers, whilst males' treatment participation was predicted by both family factors (e.g., family control & family warmth) and peer trouble. Family control predicted treatment participation in both White and Non-White adolescents, yet only peer socialization predicted White adolescents' participation. This is congruent with previous studies, where White adolescents were more likely to be influenced by their peers than Non-White adolescents (Mason et al., 2014). However, as evidenced by the current study, this influence can be beneficial for adolescents separated from deviant peers while receiving residential treatment. Lastly, none of the pathways within the Non-Hispanic group predicted treatment participation, which indicated that another unaccounted for variable or variables may be primarily responsible for treatment

participation. However, family control, family warmth, peer trouble, and peer socialization predicted treatment participation amongst the Hispanic group. As previous studies have found, Hispanic adolescents are highly influenced by their families (Frauenglass et al., 1997; Lardier et al., 2018). The results of the current study revealed that their peers predicted their treatment participation as well.

Previous research on SU treatment has demonstrated the importance of family and peer relationships during the treatment process, specifically before and after treatment (Clark, 2001; Stevens et al., 2015). Little to no research has examined how family and peers influence in-treatment participation specifically. Furthermore, the existing literature on both treatment engagement and the influence of family and peers has traditionally focused on adult participants. The results of the current study demonstrate the unique manner in which family and peers influence SU treatment. The current study also addresses the gaps in SU treatment literature by extending the research to participants in treatment and to adolescents.

These results have clinical implications for adolescent SU treatment. In nearly all groups, family control predicted treatment participation. However, caregivers and families are typically not included in the clinical practice for adolescent SU treatment, despite multiple opportunities for them to be involved at various stages of treatment (Hogue et al., 2021). As opportunities emerge, treatment providers should consider involving parents and caregivers in their adolescent's treatment, and working with them to further develop their parenting and discipline practices.

The peer factor of peer socialization also predicted treatment participation. Currently, many SU prevention and intervention programs incorporate peer-led groups into their curriculum (Reif et al., 2014; Mason et al., 2015; Paquette et al., 2019). The findings from the current study

provide additional support for the use of peer-facilitated activities. As early engagement in treatment is predictive of treatment retention and completion, peer-facilitated activities should be introduced early-on in the treatment process to increase adolescents' buy-in and subsequent treatment participation.

Limitations. The current study's generalizability is restricted due to the age of the data set, sample size, and treatment setting. As stated previously, the data utilized in the study was collected from 2011-2013. Since then, the field of SU treatment has evolved considerably. Of particular relevance is the increased usage of family-based therapy in adolescent SU treatment, as evidenced by the literature reviews conducted by Hogue and colleagues describing the adolescent SU treatment modalities from 2007-2013 and 2014-2017 (Hogue et al., 2014; Hogue et al., 2018). In the interim between the two literature reviews, there has been a breadth of studies documenting the efficacy of family-based therapy in adolescent SU treatment (van der Pol et al., 2017; Ventura & Bagley, 2017). Additionally, both academic researchers and clinical providers of SU treatment have called for culturally sensitivity within treatment (Steinka-Fry et al., 2017). Due to the advancements in the field of SU treatment, the current study's findings on treatment engagement support the need for family-based treatments. The findings lend additional support to the use of family therapy, peer groups, and cultural sensitivity in adolescent SU treatment.

The measures included in this study also present a limitation. In the context of the original study, the measures on family and peer factors were used to collect participant demographic information. However, the goal of the current study was to determine if family and peer factors predicted treatment participation. The variables utilized differentiated between positive and negative familial and peer influences (i.e. family warmth, family conflict, family

control, peer socialization, and peer trouble), but did not fully capture the concepts of familial and peer support. Family control, which was a significant predictor in nearly each demographic group, may have served as a proxy for support. Future studies would benefit from the inclusion of more granular measures that capture the specific constructs of familial and peer support.

The sample size also represents a limitation of the study. In particular, the low number of participants with complete data prohibited the use of a model of treatment participation within exclusively Black participants. This represents a key gap in the literature, as a recent study found that Black adolescents are more likely than their White counterparts to leave treatment early (Marotta et al., 2020). Therefore, more research is needed on the specific factors that influence Black adolescents' SU treatment participation.

Lastly, the participants in this study were all enrolled in a residential SU treatment facility. Therefore, their contact with those outside of the facility was limited and highly regulated. In light of this, the results of this study may not be applicable to adolescents in outpatient SU treatment, where there are no formal restrictions on where they may go or who they may contact.

Future Directions. Despite the strengths of the current study, it was not possible to examine how peers and families influence treatment engagement in Black participants due to the number of participants with outcome data. Therefore, future studies should prioritize the recruitment of racial minorities so that the differential influences of treatment engagement between individual races may be examined. Researchers should also consider collecting familial and SU data at the caregiver-level. For instance, caregiver's beliefs regarding SU may contribute to adolescents' perceived SU norms and discrepancies between caregivers and adolescents' perceptions of familial characteristics may identify key targets for SU treatment and future

interventions. When selecting measures for future studies, researchers should consider including measures that capture the constructs of family and peer support as well. Finally, future studies should examine if the same pattern of results is observed amongst adolescents in an outpatient treatment setting to determine if there are any differences compared to adolescents in a residential setting.

Conclusion. Determining the influence of family and peer characteristics on adolescent treatment participation is a critical aspect of understanding of the unique treatment needs of adolescents. The results of this study further illuminate how static factors influence dynamic family and peer characteristics, and ultimately adolescents' SU treatment participation. Leveraging adolescents' existing social capital could increase SU treatment participation and retention, which could then prevent further escalation of SU and related problems into adulthood, thus setting the adolescents on a more positive trajectory.

References

Andersson, H. W., Otterholt, E., & Gråwe, R. W. (2017). Patient satisfaction with treatments and outcomes in residential addiction institutions. *Nordic Studies on Alcohol and Drugs*, *34*(5), 375-384.

Andersson, H. W., Steinsbekk, A., Walderhaug, E., Otterholt, E., & Nordfjærn, T. (2018). Predictors of dropout from inpatient substance use treatment: a prospective cohort study. *Substance Abuse: Research and Treatment*, *12*, 1178221818760551.

Andrews, D. A., Bonta, J., & Wormith, J. S. (2011). The risk-need-responsivity (RNR) model: Does adding the good lives model contribute to effective crime prevention? *Criminal Justice and Behavior, 38*(7), 735-755.

Andrews, J. A., & Hops, H. (2010). *The influence of peers on substance use.* In L. Scheier (Ed.), *Handbook of drug use etiology: Theory, methods, and empirical findings* (p. 403–420). American Psychological Association.

Andrews, J. A., Tildesley, E., Hops, H., & Li, F. (2002). The influence of peers on young adult substance use. *Health Psychology*, *21*(4), 349.

Arndt, S., Acion, L., & White, K. (2013). How the states stack up: Disparities in substance abuse outpatient treatment completion rates for minorities. *Drug and Alcohol Dependence, 132*(3), 547-554.

Ary, D. V., Duncan, T. E., Duncan, S. C., & Hops, H. (1999). Adolescent problem behavior: The influence of parents and peers. *Behaviour Research and Therapy*, *37*(3), 217-230.

Acevedo, A., Harvey, N., Kamanu, M., Tendulkar, S., & Fleary, S. (2020). Barriers, facilitators, and disparities in retention for adolescents in treatment for substance use disorders: a qualitative study with treatment providers. *Substance Abuse Treatment, Prevention, and Policy, 15*(1), 1-13.

Barbosa, C. D., Balp, M. M., Kulich, K., Germain, N., & Rofail, D. (2012). A literature review to explore the link between treatment satisfaction and adherence, compliance, and persistence. *Patient Preference and Adherence*, *6*, 39.

Barnes, G. M., & Farrell, M. P. (1992). Parental support and control as predictors of adolescent drinking, delinquency, and related problem behaviors. *Journal of Marriage and the Family*, 763-776.

Barnes, G. M., Hoffman, J. H., Welte, J. W., Farrell, M. P., & Dintcheff, B. A. (2006). Effects of parental monitoring and peer deviance on substance use and delinquency. *Journal of Marriage and Family, 68*(4), 1084-1104.

Barry, C. M., & Wentzel, K. R. (2006). Friend influence on prosocial behavior: The role of motivational factors and friendship characteristics. *Developmental Psychology*, *42*(1), 153.

Bartholomew, N. G., Dansereau, D. F., Knight, D. K., Becan, J. E. & Flynn, P. M. (2013). *Treatment Readiness and Induction Program (TRIP).* Fort Worth: Texas Christian University, Institute of Behavioral Research.

Becan, J. E., Knight, D. K., Crawley, R. D., Joe, G. W., & Flynn, P. M. (2015). Effectiveness of the Treatment Readiness and Induction Program for increasing adolescent motivation for change. *Journal of Substance Abuse Treatment*, *50*, 38-49.

Berndt, T. J., Laychak, A. E., & Park, K. (1990). Friends' influence on adolescents' academic achievement motivation: An experimental study. *Journal of Educational Psychology*, *82*(4), 664.

Best, D., Honor, S., Karpusheff, J., Loudon, L., Hall, R., Groshkova, T., & White, W. (2012). Well-being and recovery functioning among substance users engaged in posttreatment recovery support groups. *Alcoholism Treatment Quarterly*, *30*(4), 397-406.

Boeri, M., Gardner, M., Gerken, E., Ross, M., & Wheeler, J. (2016). "I don't know what fun is": Examining the intersection of social capital, social networks, and social recovery. *Drugs & Alcohol Today, 16*(1), 95-105. doi: 10.1108/DAT-08-2015-0046

Brady, K. T., & Randall, C. L. (1999). Gender differences in substance use disorders. *Psychiatric Clinics of North America*, *22*(2), 241-252.

Breiner, K., Li, A., Cohen, A. O., Steinberg, L., Bonnie, R. J., Scott, E. S., ... & Galván, A. (2018). Combined effects of peer presence, social cues, and rewards on cognitive control in adolescents. *Developmental Psychobiology, 60*(3), 292-302.

Broome, K. M., Joe, G. W., & Simpson, D. D. (2001). Engagement models for adolescents in DATOS-A. *Journal of Adolescent Research*, *16*(6), 608-623.

Broome, K. M., Simpson, D. D., & Joe, G. W. (1999). Patient and program attributes related to treatment process indicators in DATOS. *Drug and Alcohol Dependence*, *57*(2), 127-135.

Browne, M. W., & Cudeck, R. (1989). Single sample cross-validation indices for covariance structures. *Multivariate Behavioral Research,* 24, 445-455.

Bryce, C. I., Bradley, R. H., Abry, T., Swanson, J., & Thompson, M. S. (2019). Parents' and teachers' academic influences, behavioral engagement, and first-and fifth-grade achievement. *School Psychology*, *34*(5), 492.

Carlson, M. J., & Gabriel, R. M. (2001). Patient satisfaction, use of services, and one-year outcomes in publicly funded substance abuse treatment. *Psychiatric Services*, *52*(9), 1230-1236.

Caskey, M., & Anfara, V. A. (2014). Developmental characteristics of young adolescents. *Association for Middle Level Education*.

Clark, D. B., Thatcher, D. L., & Maisto, S. A. (2005). Supervisory neglect and adolescent alcohol use disorders: Effects on AUD onset and treatment outcome. *Addictive Behaviors*, *30*(9), 1737-1750.

Clark, R. E. (2001). Family support and substance use outcomes for persons with mental illness and substance use disorders. *Schizophrenia Bulletin, 27*(1), 93-101.

Cloud, W., & Granfield, R. (2008). Conceptualizing recovery capital: Expansion of a theoretical construct. *Substance Use & Misuse*, *43*(12-13), 1971-1986.

Conger, K. J., Conger, R. D., & Scaramella, L. V. (1997). Parents, siblings, psychological control, and adolescent adjustment. *Journal of Adolescent Research, 12*(1), 113-138.

Coombs, R. H., Paulson, M. J., & Richardson, M. A. (1991). Peer vs. parental influence in substance use among Hispanic and Anglo children and adolescents. *Journal of Youth and Adolescence*, *20*(1), 73-88.

Cummings, J. R., Wen, H., & Druss, B. G. (2011). Racial/ethnic differences in treatment for substance use disorders among US adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, *50*(12), 1265-1274.

D'Amico, E. J., Ellickson, P. L., Collins, R. L., Martino, S., & Klein, D. J. (2005). Processes linking adolescent problems to substance-use problems in late young adulthood. *Journal of Studies on Alcohol*, *66*(6), 766-775.

Daspe, M. È., Arbel, R., Ramos, M. C., Shapiro, L. A., & Margolin, G. (2019). Deviant peers and adolescent risky behaviors: The protective effect of nonverbal display of parental warmth. *Journal of Research on Adolescence*, *29*(4), 863-878.

Dawes, M. (2017). Early adolescents' social goals and school adjustment. *Social Psychology of Education, 20*(2), 299-328.

Fletcher, J. M., & Sindelar, J. L. (2012). The effects of family stressors on substance use initiation in adolescence. *Review of Economics of the Household*, *10*(1), 99-114.

Franck, K. L., & Buehler, C. (2007). A family process model of marital hostility, parental depressive affect, and early adolescent problem behavior: The roles of triangulation and parental warmth. *Journal of Family Psychology*, *21*(4), 614.

Frauenglass, S., Routh, D. K., Pantin, H. M., & Mason, C. A. (1997). Family support decreases influence of deviant peers on Hispanic adolescents' substance use. *Journal of Clinical Child Psychology*, *26*(1), 15-23.

Formoso, D., Gonzales, N. A., & Aiken, L. S. (2000). Family conflict and children's internalizing and externalizing behavior: Protective factors. *American Journal of Community Psychology*, *28*(2), 175-199.

Fosco, G. M., Mak, H. W., Ramos, A., LoBraico, E., & Lippold, M. (2019). Exploring the promise of assessing dynamic characteristics of the family for predicting adolescent risk outcomes. *Journal of Child Psychology and Psychiatry*, *60*(8), 848-856.

Gardner, M., & Steinberg, L. (2005). Peer influence on risk taking, risk preference, and risky decision making in adolescence and adulthood: an experimental study. *Developmental Psychology*, *41*(4), 625.

Garner, B. R., Knight, K., Flynn, P. M., Morey, J. T., & Simpson, D. D. (2007). Measuring offender attributes and engagement in treatment using the Client Evaluation of Self and Treatment. *Criminal Justice and Behavior, 34*(9), 1113-1130.

Giordano, P. C., Cernkovich, S. A., & DeMaris, A. (1993). The family and peer relations of Black adolescents. *Journal of Marriage and Family*, *55*(2), 277.

Gogel, L. P., Cavaleri, M. A., Gardin, J. G., & Wisdom, J. P. (2011). Retention and ongoing participation in residential substance abuse treatment: Perspectives from adolescents, parents and staff on the treatment process. *The Journal of Behavioral Health Services & Research*, *38*(4), 488-496.

Griffin, A. (2017). Adolescent Neurological Development and Implications for Health and Well-Being. *Healthcare*, *5*(4), 62.

Gruenenfelder-Steiger, A. E., Harris, M. A., & Fend, H. A. (2016). Subjective and objective peer approval evaluations and self-esteem development: A test of reciprocal, prospective, and long-term effects. *Developmental Psychology*, *52*(10), 1563.

Guo, J. I. E., Hill, K. G., Hawkins, J. D., Catalano, R. F., & Abbott, R. D. (2002). A developmental analysis of sociodemographic, family, and peer effects on adolescent illicit drug initiation. *Journal of the American Academy of Child & Adolescent Psychiatry*, *41*(7), 838-845.

Hawke, L. D., Mehra, K., Settipani, C., Relihan, J., Darnay, K., Chaim, G., & Henderson, J. (2019). What makes mental health and substance use services youth friendly? A scoping review of literature. *BMC Health Services Research*, *19*(1), 1-16.

Herrenkohl, T. I., Lee, J. O., Kosterman, R., & Hawkins, J. D. (2012). Family influences related to adult substance use and mental health problems: A developmental analysis of child and adolescent predictors. *Journal of Adolescent Health*, *51*(2), 129-135.

Hiller, M. L., Knight, K., Leukefeld, C., & Simpson, D. D. (2002). Motivation as a predictor of therapeutic engagement in mandated residential substance abuse treatment. *Criminal Justice and Behavior*, *29*(1), 56-75.

Hogue, A., Henderson, C. E., Ozechowski, T. J., & Robbins, M. S. (2014). Evidence base on outpatient behavioral treatments for adolescent substance use: Updates and recommendations 2007–2013. *Journal of Clinical Child & Adolescent Psychology*, *43*(5), 695-720.

Hogue, A., Henderson, C. E., Becker, S. J., & Knight, D. K. (2018). Evidence base on outpatient behavioral treatments for adolescent substance use, 2014–2017: Outcomes, treatment delivery, and promising horizons. *Journal of Clinical Child & Adolescent Psychology*, *47*(4), 499-526.

Hogue, A., Becker, S. J., Fishman, M., Henderson, C. E., & Levy, S. (2021). Youth OUD treatment during and after COVID: Increasing family involvement across the services continuum. *Journal of Substance Abuse Treatment, 120,* 108159.

Hoskins, D. H. (2014). Consequences of parenting on adolescent outcomes. *Societies*, *4*(3), 506-531.

Hser, Y. I., Grella, C. E., Hubbard, R. L., Hsieh, S. C., Fletcher, B. W., Brown, B. S., & Anglin, M. D. (2001). An evaluation of drug treatments for adolescents in 4 US cities. *Archives of General Psychiatry*, *58*(7), 689-695.

Hu, L. T., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods, 3*(4), 424.

Hudgins, J. D., Porter, J. J., Monuteaux, M. C., & Bourgeois, F. T. (2019). Prescription opioid use and misuse among adolescents and young adults in the United States: A national survey study. *PLoS Medicine*, *16*(11).

IBM Corp. Released 2020. IBM SPSS Statistics for Windows, Version 27.0. Armonk, NY: IBM Corp.

Ingram, K. M., Espelage, D. L., Davis, J. P., & Merrin, G. J. (2020). Family violence, sibling, and peer aggression during adolescence: associations with behavioral health outcomes. *Frontiers in Psychiatry*, *11*, 26.

Joe, G. W., Broome, K. M., Rowan-Szal, G. A., & Simpson, D. D. (2002). Measuring patient attributes and engagement in treatment. *Journal of Substance Abuse Treatment, 22*(4), 183-196.

Joe, G. W., Simpson, D. D., Greener, J. M., & Rowan-Szal, G. A. (2004). Development and validation of a client problem profile and index for drug treatment. *Psychological Reports*, *95*(1), 215-234.

Johnson, R. M., Fleming, C. B., Cambron, C., Dean, L. T., Brighthaupt, S. C., & Guttmannova, K. (2019). Race/ethnicity differences in trends of marijuana, cigarette, and alcohol use among 8th, 10th, and 12th graders in Washington state, 2004–2016. *Prevention Science*, *20*(2), 194-204.

Johnson, V., & Pandina, R. J. (1991). Effects of the family environment on adolescent substance use, delinquency, and coping styles. *The American Journal of Drug and Alcohol Abuse*, *17*(1), 71-88.

Kapetanovic, S., Boele, S., & Skoog, T. (2019). Parent-adolescent communication and adolescent delinquency: Unraveling within-family processes from between-family differences. *Journal of Youth and Adolescence*, *48*(9), 1707-1723.

Kendra, M. S., Weingardt, K. R., Cucciare, M. A., & Timko, C. (2015). Satisfaction with substance use treatment and 12-step groups predicts outcomes. *Addictive Behaviors*, *40*, 27-32.

Knight, D. K., Becan, J. E., Landrum, B., Joe, G. W., & Flynn, P. M. (2014). Screening and assessment tools for measuring adolescent client needs and functioning in substance abuse treatment. *Substance Use & Misuse, 49*(7), 902-918.

Knight, D. K., Joe, G. W., Crawley, R. D., Becan, J. E., Dansereau, D. F., & Flynn, P. M. (2016). The effectiveness of the Treatment Readiness and Induction Program (TRIP) for improving during-treatment outcomes. *Journal of Substance Abuse Treatment*, *62*, 20-27.

Lansford, J. E., Dodge, K. A., Fontaine, R. G., Bates, J. E., & Pettit, G. S. (2014). Peer rejection, affiliation with deviant peers, delinquency, and risky sexual behavior. *Journal of Youth and Adolescence*, *43*(10), 1742-1751.

Lardier Jr, D. T., Barrios, V. R., Garcia-Reid, P., & Reid, R. J. (2018). Preventing substance use among Hispanic urban youth: Valuing the role of family, social support networks, school importance, and community engagement. *Journal of Child & Adolescent Substance Abuse*, *27*(5-6), 251-263.

Lee, C. T., Padilla-Walker, L. M., & Memmott-Elison, M. K. (2017). The role of parents and peers on adolescents' prosocial behavior and substance use. *Journal of Social and Personal Relationships*, *34*(7), 1053-1069.

Levy, S., Campbell, M. D., Shea, C. L., & DuPont, R. (2018). Trends in abstaining from substance use in adolescents: 1975–2014. *Pediatrics*, *142*(2).

Li, J. J., Cho, S. B., Salvatore, J. E., Edenberg, H. J., Agrawal, A., Chorlian, D. B., ... & Reilly, M. (2017). The impact of peer substance use and polygenic risk on trajectories of heavy episodic drinking across adolescence and emerging adulthood. *Alcoholism: Clinical and Experimental Research*, *41*(1), 65-75.

Lipari, R. N., Park-Lee, E., & Van Horn, S. (2016). America's need for and receipt of substance use treatment in 2015. In *The CBHSQ Report*. Substance Abuse and Mental Health Services Administration (US).

Littell, J. H., Alexander, L. B., & Reynolds, W. W. (2001). Client participation: Central and underinvestigated elements of intervention. *Social Service Review*, *75*(1), 1-28.

Malonda, E., Llorca, A., Mesurado, B., Samper, P., & Mestre, M. V. (2019). Parents or peers? Predictors of prosocial behavior and aggression: a longitudinal study. *Frontiers in Psychology*, *10*, 2379.

Manning, V., Garfield, J. B., Best, D., Berends, L., Room, R., Mugavin, J., Larner, A., Lam, T., Buykx, P., Allsop, S., & Lubman, D. I. (2017). Substance use outcomes following treatment: Findings from the Australian Patient Pathways Study. *Australian & New Zealand Journal of Psychiatry, 51*(2), 177–189.

Marchand, K., Beaumont, S., Westfall, J., MacDonald, S., Harrison, S., Marsh, D. C., Schechter, M. T., & Oviedo-Joekes, E. (2019). Conceptualizing patient-centered care for substance use disorder treatment: findings from a systematic scoping review. *Substance Abuse Treatment, Prevention, and Policy*, *14*(1), 1-15.

Marotta, P. L., Tolou-Shams, M., Cunningham-Williams, R. M., Washington Sr, D. M., & Voisin, D. (2020). Racial and ethnic disparities, referral source and attrition from outpatient substance use disorder treatment among adolescents in the United States. *Youth & Society.* Advance online publication. doi: 10.1177/0044118X20960635

Mason, M. J., Mennis, J., Linker, J., Bares, C., & Zaharakis, N. (2014). Peer attitudes effects on adolescent substance use: The moderating role of race and gender. *Prevention Science*, *15*(1), 56-64.

Mason, M. J., Zaharakis, N. M., Rusby, J. C., Westling, E., Light, J. M., Mennis, J., & Flay, B. R. (2017). A longitudinal study predicting adolescent tobacco, alcohol, and cannabis use by behavioral characteristics of close friends. *Psychology of addictive behaviors*, *31*(6), 712.

Mason, M., Light, J., Campbell, L., Keyser-Marcus, L., Crewe, S., Way, T., ... & McHenry, C. (2015). Peer network counseling with urban adolescents: a randomized controlled trial with moderate substance users. *Journal of substance abuse treatment*, *58*, 16-24.

Mawson, E., Best, D., Beckwith, M., Dingle, G. A., & Lubman, D. I. (2015). Social identity, social networks and recovery capital in emerging adulthood: A pilot study. *Substance Abuse Treatment, Prevention, and Policy, 10*(45).

McHugh, R. K., Votaw, V. R., Sugarman, D. E., & Greenfield, S. F. (2018). Sex and gender differences in substance use disorders. *Clinical psychology review*, *66*, 12-23.

Mechanic, D., & Hansell, S. (1989). Divorce, family conflict, and adolescents' well-being. *Journal of Health and Social Behavior*, 105-116.

Melotti, G., Potì, S., Gianesini, G., & Brighi, A. (2018). Adolescents at risk of delinquency. The role of parental control, trust, and disclosure. *Deviant Behavior*, *39*(3), 347-362.

Mensinger, J. L., Diamond, G. S., Kaminer, Y., & Wintersteen, M. B. (2006). Adolescent and therapist perception of barriers to outpatient substance abuse treatment. *The American Journal on Addictions, 15*, 16-25.

Moos, R. H., & King, M. J. (1997). Participation in community residential treatment and substance abuse patients' outcomes at discharge. *Journal of Substance Abuse Treatment*, *14*(1), 71-80.

Muthén, L. K., & Muthen, B. (2017). Mplus user's guide: Statistical analysis with latent variables, user's guide. Muthén & Muthén.

Neale, J., Tompkins, C. N., & Strang, J. (2018). Qualitative exploration of relationships between peers in residential addiction treatment. *Health & Social Care in the Community*, *26*(1), 39-46.

Neppl, T. K., Dhalewadikar, J., & Lohman, B. J. (2016). Harsh parenting, deviant peers, adolescent risky behavior: Understanding the meditational effect of attitudes and intentions. *Journal of Research on Adolescence*, *26*(3), 538-551.

Nordheim, K., Walderhaug, E., Alstadius, S., Kern-Godal, A., Arnevik, E., & Duckert, F. (2018). Young adults' reasons for dropout from residential substance use disorder treatment. *Qualitative Social Work*, *17*(1), 24-40.

O'Brien, K., & Mosco, J. (2012). Positive parent-child relationships. *Positive Relationships, 4*(3), 211-229.

Paquette, K. L., Winn, L. A. P., Wilkey, C. M., Ferreira, K. N., & Donegan, L. R. W. (2019). A framework for integrating young peers in recovery into adolescent substance use prevention and early intervention. *Addictive Behaviors*, *99*, 106080.

Reif, S., Braude, L., Lyman, D. R., Dougherty, R. H., Daniels, A. S., Ghose, S. S., ... & Delphin-Rittmon, M. E. (2014). Peer recovery support for individuals with substance use disorders: Assessing the evidence. *Psychiatric Services*, *65*(7), 853-861.

Rusby, J. C., Light, J. M., Crowley, R., & Westling, E. (2018). Influence of parent–youth relationship, parental monitoring, and parent substance use on adolescent substance use onset. *Journal of Family Psychology*, *32*(3), 310.

Saloner, B., Carson, N., & Lê Cook, B. (2014). Explaining racial/ethnic differences in adolescent substance abuse treatment completion in the United States: a decomposition analysis. *Journal of Adolescent Health*, *54*(6), 646-653.

Schuler, M. S., Tucker, J. S., Pedersen, E. R., & D'Amico, E. J. (2019). Relative influence of perceived peer and family substance use on adolescent alcohol, cigarette, and marijuana use across middle and high school. *Addictive Behaviors*, *88*, 99-105.

Seginer, R. (2003). Adolescent future orientation: An integrated cultural and ecological perspective. *Online Readings in Psychology and Culture, 6*(1), 2307-0919.

Simpson, D. D. (2000). TCU Model of treatment process and outcomes. Research Summary: Focus on treatment process and outcomes. *Institute of Behavioural Research, Texas Christian University.* Available from: www. ibr. tcu. edu.

Simpson, D. D., Joe, G. W., Rowan-Szal, G., & Greener, J. (1995). Client engagement and change during drug abuse treatment. *Journal of Substance Abuse, 7*(1), 117-134.

Simpson, D. D., Joe, G. W., Rowan-Szal, G. A., & Greener, J. M. (1997). Drug abuse treatment process components that improve retention. *Journal of Substance Abuse Treatment*, *14*(6), 565-572.

Smetana, J. G., & Rote, W. M. (2019). Adolescent–parent relationships: Progress, processes, and prospects. *Annual Review of Developmental Psychology*, *1*, 41-68.

Staton-Tindall, M., Garner, B. R., Morey, J. T., Leukefeld, C., Krietemeyer, J., Saum, C. A., & Oser, C. B. (2007). Gender differences in treatment engagement among a sample of incarcerated substance abusers. *Criminal Justice and Behavior*, *34*(9), 1143-1156.

Steinberg, L., & Morris, A. S. (2001). Adolescent development. *Annual Review of Psychology*, *52*(1), 83-110.

Steinka-Fry, K. T., Tanner-Smith, E. E., Dakof, G. A., & Henderson, C. (2017). Culturally sensitive substance use treatment for racial/ethnic minority youth: A meta-analytic review. *Journal of Substance Abuse Treatment*, *75*, 22-37.

Streit, C., Carlo, G., Ispa, J. M., & Palermo, F. (2020). Direct and indirect relations between family conflict and youth's later behavioral outcomes. *Social Development*.

Stevens, E., Jason, L. A., Ram, D., & Light, J. (2015). Investigating social support and network relationships in substance use disorder recovery. *Substance Abuse, 36*(4), 396-399.

Stringer, K. L., & Baker, E. H. (2018). Stigma as a barrier to substance abuse treatment among those with unmet need: an analysis of parenthood and marital status. *Journal of Family Issues*, *39*(1), 3-27.

Substance Abuse and Mental Health Services Administration. (2019). *Key substance use and mental health indicators in the United States: Results from the 2018 National Survey on Drug Use and Health.* Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Rockville, MD. Retrieved from https://www.samhsa.gov/data/

Telzer, E. H., Gonzales, N., & Fuligni, A. J. (2014). Family obligation values and family assistance behaviors: Protective and risk factors for Mexican–American adolescents' substance use. *Journal of Youth and Adolescence*, *43*(2), 270-283.

Thompson, S., Bender, K., Lantry, J., & Flynn, P. (2007). Treatment Engagement: Building Therapeutic Alliance in Home-Based Treatment with Adolescents and their Families. *Contemporary Family Therapy: An International Journal*, *29*(1/2), 39–55.

Thompson, S. J., Bender, K., Windsor, L. C., & Flynn, P. M. (2009). Keeping families engaged: the effects of home-based family therapy enhanced with experiential activities. *Social Work Research*, *33*(2), 121–126.

Tompsett, C. J., Domoff, S. E., & Toro, P. A. (2013). Peer substance use and homelessness predicting substance abuse from adolescence through early adulthood. *American Journal of Community Psychology*, *51*(3-4), 520-529.

Trucco, E. M. (2020). A review of psychosocial factors linked to adolescent substance use. *Pharmacology Biochemistry and Behavior*, 172969.

van der Pol, T. M., Hoeve, M., Noom, M. J., Stams, G. J. J., Doreleijers, T. A., van Domburgh, L., & Vermeiren, R. R. (2017). Research Review: The effectiveness of multidimensional family therapy in treating adolescents with multiple behavior problems–a meta-analysis. *Journal of Child Psychology and Psychiatry*, *58*(5), 532-545.

Van Hoorn, J., Crone, E. A., & Van Leijenhorst, L. (2017). Hanging out with the right crowd: Peer influence on risk-taking behavior in adolescence. *Journal of Research on Adolescence*, *27*(1), 189-200.

Van Hoorn, J., Van Dijk, E., Meuwese, R., Rieffe, C., & Crone, E. A. (2016). Peer influence on prosocial behavior in adolescence. *Journal of Research on Adolescence*, *26*(1), 90-100.

Ventura, A. S., & Bagley, S. M. (2017). To improve substance use disorder prevention, treatment and recovery: engage the family. *Journal of Addiction Medicine*, *11*(5), 339-341.

Vigo, D., Patten, S., Pajer, K., Krausz, M., Taylor, S., Rush, B., Raviola, G., Saxena, S., Thornicroft, G., & Yatham, L. N. (2020). Mental Health of Communities during the COVID-19 Pandemic. *The Canadian Journal of Psychiatry*, *65*(10), 681–687.

Wentzel, K. R., & Ramani, G. B. (2016). *Handbook of social influences in school contexts: Social-emotional, motivation, and cognitive outcomes.* Routledge.

Werner, K. B., Cunningham-Williams, R. M., Ahuja, M., & Bucholz, K. K. (2020). Patterns of gambling and substance use initiation in African American and White adolescents and young adults. *Psychology of Addictive Behaviors*, *34*(2), 382.

Wojciechowski, T. W. (2018). The development of deviant peer association across the life-course and its relevance for predicting offending in early adulthood. *Journal of Developmental and Life-Course Criminology*, *4*(1), 73-91.

Yoon, D., Yoon, S., Yoon, M., & Snyder, S. M. (2019). Developmental trajectories of deviant peer affiliation in adolescence: Associations with types of child maltreatment and substance use. *Children and Youth Services Review*, *105*, 104446.

Zheng, Y., & McMahon, R. J. (2019). Lability in parental warmth in childhood: Antecedents and early adolescent outcomes. *Journal of Clinical Child & Adolescent Psychology*, 1-13.

APPENDIX A

Texas Christian University Adolescent Risk Form A

Instructions: Please mark answers to the series of questions listed below.

1. What is your current age? .....
   |___|___|

2. What was your date of admission to THIS program or facility? .....
   |___|___||___|___||___|___|
   MONTH DAY YEAR

3. What is your gender? ..... ○ Male ○ Female

4. Are you Hispanic or Latino? ..... ○ No ○ Yes

5. Are you? [MARK ONE]

   ☐ American Indian/Alaska Native
   ☐ Asian
   ☐ Native Hawaiian/Pacific Islander
   ☐ Black/African American
   ☐ White
   ☐ More than one race
   ☐ Other (specify) _____

6. What is your last grade or year that you completed in school?

   ☐ Less than 6
   ☐ 6 ○ 7 ○ 8
   ☐ 9 ○ 10 ○ 11 ○ 12
   ☐ GED

7. In your last semester in school, what kind of grades did you typically get?

   ☐ A's
   ☐ B's ○ C's
   ☐ D's
   ☐ F's
   ☐ Was not attending

8. How important is it for you to get help with school?

- ☐ Not important at all
- ☐ Somewhat important
- ☐ Important
- ☐ Very important

9. How often did you cut classes during the last 30 days of school?

- ☐ Almost every day
- ☐ Several times a week
- ☐ About once a week
- ☐ Only once or twice
- ☐ Never

10. Where have you been living (before entering this program or facility)? [MARK ONE]

- ☐ At home with both parents
- ☐ With one parent
- ☐ With step family
- ☐ With foster parents
- ☐ On your own or with friends
- ☐ In jail or juvenile detention facility
- ☐ Other (specify) _____

11. How many brothers and sisters reside where you have been living? .....|___|___|

12. How much have your parents/guardians, with whom you live, worked during the last year?

Mother:	Father:
○ Full time	○ Full time
☐ Part-time (regular hours)	○ Part-time (regular hours)
☐ Part-time (irregular hours)	○ Part-time (irregular hours)
☐ Not employed	○ Not employed

13. Did your parents/guardians, with whom you live, complete high school or get a G.E.D.?

Mother? ○ *No* ○ *Yes*

Father? ○ *No* ○ *Yes*

14. Do your parents/guardians, with whom you live, received public assistance (TANF/AFDC, food stamps, social security, etc.)? ..... ○ *No* ○ *Yes*

15. Are your biological (natural) parents . . . [MARK ALL THAT APPLY]

- ☐ Never married to each other (living apart)
- ☐ Never married to each other (living together)
- ☐ Married to each other
- ☐ Separated
- ☐ Divorced
- ☐ Father deceased
- ☐ Mother deceased
- ☐ Father remarried
- ☐ Mother remarried

APPENDIX B

Texas Christian University Drug Screen-II (TCU DS-II) with Opioid Supplement Scoring

Instructions and Form

Scoring Instructions. The TCU Drug Screen is scored to produce a single total score which can range from 9 to 18. Score values of 12 or greater indicate relatively severe drug-related problems, and correspond approximately to DSM drug dependence diagnosis. Responses to item 10 indicate which drug (or drugs) the respondent feels is primarily responsible for his or her drug-related problems. To compute the total score, give 2 points to each "yes" response and 1 point to each "no" response to items 1 through 9 and compute the sum . If a respondent answers "yes" to either item 4a or 4b, they receive 2 points for item 4. Likewise, if a respondent answers "yes" to item 6a, 6b, or 6c, they receive 2 points for item 6. Note. Although items 10 through 15 are not calculated as part of the total score, they provide additional ancillary information that may be useful in guiding treatment decisions.

During the last 12 months (before being locked up, if applicable) –

[Yes/No]

1. Did you use larger amounts of drugs or use them for a longer time than you planned or intended?
2. Did you try to cut down on your drug use but were unable to do it?
3. Did you spend a lot of time getting drugs, using them, or recovering from their use?

4a. Did you get so high or sick from using drugs that it kept you from doing work, going to school, or caring for children?

4b. Did you get so high or sick from drugs that it caused an accident or put you or others in danger?

5. Did you spend less time at work, school, or with friends so that you could use drugs?

6a. Did your drug use cause emotional or psychological problems?

6b. Did your drug use cause problems with family, friends, school work, or police?

6c. Did your drug use cause physical health or medical problems?

7. Did you increase the amount of a drug you were taking so that you could get the same effects as before?
8. Did you ever keep taking a drug to avoid withdrawal symptoms or keep from getting sick?
9. Did you get sick or have withdrawal symptoms when you quit or missed taking a drug?

10.Which drug caused the most serious problem?
[Choose one]

○ *None*
○ *Alcohol*
○ *Marijuana/Hashish*
○ *Hallucinogens/LSD/PCP/Psychedelics/Mushrooms*
○ *Inhalants*
○ *Crack/Freebase*
○ *Heroin and Cocaine (mixed together as Speedball)*
○ *Cocaine (by itself)*
○ *Heroin (by itself)*
○ *Street methadone (non-prescription)*
○ *Other Opiates/Opium/Morphine/Demerol*
○ *Methamphetamines*
○ *Amphetamines (other uppers)*
○ *Tranquilizers/Barbiturates/Sedatives (downers)*

How often did you use each type of drug during the last 12 months?
[Never, Only a few times, 1-3 times per month, 1-5 times per week, About every day]

11a. Alcohol
11b. Marijuana/Hashish
11c. Hallucinogens/LSD/PCP/Psychedelics/Mushrooms
11d. Inhalants
11e. Crack/Freebase
11f. Heroin and Cocaine (mixed together as Speedball)
11g. Cocaine (by itself)
11h. Heroin (by itself)
11i. Street Methadone (non-prescription)
11j. Other Opiates/Opium/Morphine/Demerol
11k. Methamphetamines
11l. Amphetamines (other uppers)
11m. Tranquilizers/Barbiturates/Sedatives (downers)
11n. Other *(specify)*_____

12. During the last 12 months, how often did you inject drugs with a needle?
[never, only a few times, 1-3 times/month, 1-5 times per week, daily]

13.How serious do you think your drug problems are?
[not at all, slightly, moderately, considerably, extremely]

14.How many times before now have you ever been in a drug treatment program?
[DO NOT INCLUDE AA/NA/CA MEETINGS]
[never, 1 time, 2 times, 3 times, 4 or more times]

15.How important is it for you to get drug treatment now?
[not at all, slightly, moderately, considerably, extremely]

APPENDIX C

Texas Christian University Friends, Family, and Self Form (TCU FFS) Scales

A. Family Warmth (FWY)

14. Your family often sits down to eat together at the same time.

17. You have family who make you feel loved.

18. Your parents often tell you they love and care for you.

19. You have parents who understand you.

20. Your parents pay attention to what you say.

23. Your family is helpful and supportive when you get discouraged.

29. When you have a problem, your family will stand by you.

B. Family Control (FCLY)

2. Your parents often make decisions for you.

9. Your parents let you go where you please without asking. ®

13. You have more rules in your family than do your friends.

25. There are family punishments when you do something wrong.

28. There are clear rules in your family that you have to follow.

32. Your parents let you off easy when you do something wrong. ®

C. Family Conflict (FCFY)

4. There are lots of arguments or fights in your family.

8. Members of your family often get really mad at one another.

11. Members of your family talk badly about each other.

27. Your family members often yell at each other.

31. Your family members often hit each other.

D. Peer Trouble (PTBY)

3. You have friends who have dropped out of school.

5. You have friends who have been in trouble because of alcohol or drug use.

10. You have friends who have damaged other people's property.

12. Your friends do things that can get them into trouble with the law.

24. You have friends who have been stopped or picked up by the police.

30. You have friends who are in gangs of some type.

35. You have friends who have used a weapon (gun, knife, or club) in a fight.

E. Peer to Family (PFY)

6. Your parents like most of your friends.

16. Most of your friends like your parents.

26. Your parents know many of your friends.

33. Your parents know your friends' parents.

F. Peer Socialization (PSOY)

1. Your friends usually get passing grades in school or have regular jobs.

7. Your friends like to play sports.

15. You have friends who often volunteer time to help others.

21. Your friends usually study, read, or do homework most days.

22. Most of your friends want to complete more school.

34. You have friends who want to go to college.

APPENDIX D

Texas Christian University Treatment Engagement Form (TCU ENG) Scales

A. Treatment Participation (TPY)

6. You are willing to talk about your feelings during counseling.

9. You have made progress with your drug/alcohol problems.

11. You have learned to analyze and plan ways to solve your problems.

12. You have made progress toward your treatment program goals.

13. You always attend the counseling sessions scheduled for you.

20. You have stopped your drug use while in this program.

22. You always participate actively in your counseling sessions.

23. You have made progress in understanding your feelings and behavior.

25. You have improved your relations with other people because of this treatment.

28. You have made progress with your emotional or psychological issues.

31. You give honest feedback during counseling.

36. Other clients at this program make it hard for you to focus on your treatment. ®

B. Treatment Satisfaction (TSY)

2. Time schedules for counseling sessions at this program are convenient for you.

4. This program expects you to learn responsibility and self-discipline.

7. This program is organized and run well.

10. You are satisfied with this program.

26. The staff here are efficient at doing their job.

34. You can get plenty of personal counseling at this program.

C. Counseling Rapport (CRY)

1. You trust your counselor.

3. It's always easy to follow or understand what your counselor is trying to tell you.

5. Your counselor is easy to talk to.

8. You are motivated and encouraged by your counselor.

14. Your counselor recognizes the progress you make in treatment.

15. Your counselor is well organized and prepared for each counseling session.

16. Your counselor is sensitive to your situation and problems.

17. Your treatment plan has reasonable goals.

18. Your counselor views your problems and situations realistically.

21. Your counselor helps you develop confidence in yourself.

29. Your counselor respects you and your opinions.

32. You can depend on your counselor's understanding.

D. Peer Support (PSY)

19. Other clients at this program care about you and your problems.

24. Other clients at this program are helpful to you.

27. You are similar to (or like) other clients of this program.

30. You have developed positive trusting friendships while in this program.

33. There is a sense of family (or community) in this program.

35. Your friendships at this program have gotten you in trouble with the staff. ®

VITA

Personal Background	Elizabeth Dianne Joseph Born December 27, 1996, Lake Charles, Louisiana Daughter of Susan Drez, MD, and Jeffrey Joseph, MD
Education	Diploma, Saint Louis Catholic High School, Lake Charles, Louisiana, 2015 Bachelor of Science, Psychology, *magna cum laude* with Upper Level Honors Distinction, Louisiana State University, 2019
Experience	Student Research Assistant, Pediatric Obesity Lab, Pennington Biomedical Research Center, 2017– 2019 Honors Student Research Assistant, Risk and Decision Making Laboratory, Louisiana State University, 2018– 2019 Research Assistant, Institute of Behavioral Research, Texas Christian University, 2019 – Present

ABSTRACT

THE INFLUENCE OF SOCIAL CAPITAL ON ADOLESCENT SUBSTANCE USE TREATMENT PARTICIPATION

By Elizabeth Joseph

Department of Psychology

Texas Christian University

Thesis Advisor: Dr. Kevin Knight, Director, Institute of Behavioral Research

The current study utilized structural equation modeling to examine the influence of social capital, or family and peer relationships, on adolescents' substance use treatment participation. In the total sample, the results indicated that family control, family warmth, peer socialization, and peer trouble positively predicted adolescents' treatment participation. However, differences between predictors emerged within gender, racial, and ethnic groups. The study provided clinical implications for adolescent substance use treatment plan development and treatment engagement. Additionally, the current study provides further evidence on the importance of adolescent relationships within the treatment process.