

EXAMINING ADOLESCENT TREATMENT ENGAGEMENT
USING A MODIFIED THEORY OF PLANNED BEHAVIOR

by

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EXAMINING ADOLESCENT TREATMENT ENGAGEMENT USING A MODIFIED THEORY OF PLANNED BEHAVIOR

Brittany Landrum

Adolescence is often characterized as a period of risk-taking with youth frequently engaging in risky behaviors such as drug use, speeding, and drinking and driving (Gullone, Moore, Moss, & Boyd, 2000). Indeed, 10.6 million people over the age of 12 reported driving under the influence of illicit drugs in 2010 (SAMHSA, 2011). The increase in risky behavior during this period may be due to adolescent judgment and decision making being highly influenced by social and cognitive expectancies, or the beliefs regarding the desired outcome of a behavior. While adolescents have the cognitive capacity to engage in sophisticated reasoning, they are often influenced by their social context (especially peers; Dinges & Oetting, 1993; Henry, 2008; Swadi, 1992) and by misguided thinking around how they are (or will be) perceived. Their tendency to engage in risky behaviors may be attributed in part to false beliefs and expectations –thinking errors.

Although risky behaviors are characterized by potentially severe negative consequences (including legal ramifications and long-term impacts including pregnancy), adolescents often perceive these behaviors as having minimal consequences or even positive benefits (such as driving fast or getting drunk; Moore & Gullone, 1996). Undoubtedly, risky behavior is associated with lower perceived risk among adolescents (Gullone et al., 2000; SAMSHA, 2011) demonstrating that adolescents frequently underestimate the extent of harm and consequences that result from their decisions and overestimate their level of control in a situation (Quadrel et al. 1993; Wickman et al. 2008). In addition, research has shown that adolescents who use drugs and alcohol overestimate the degree to which their peers engage in these behaviors (Martens et al., 2006; Wolfson, 2000). False attributions and expectancies regarding peer drug use reflect the degree to which adolescents perceive their own behavior as conforming to social norms and can lead some adolescents to view their own drug use as non-problematic and a normal part of growing up. Understanding how these drug-involved adolescents think about their drug use within the context of social and cognitive

expectancies may be key to improving intervention efforts. The purpose of this study is to examine how social and cognitive expectancies regarding drug use impact adolescents' motivation and engagement in drug treatment.

Literature Review

Motivation and Engagement

With 4.1 million people aged 12 and older receiving treatment for problems related to alcohol and illicit drug use (SAMHSA, 2011), there is a growing need to examine judgment and decision making among youth who engage in these behaviors. Motivating youth to stay in treatment is a serious problem that interferes with intervention efforts (e.g., Slesnick et al., 2009). The same thinking patterns that inhibit good judgment in risky situations can also hinder treatment engagement efforts. Adolescents with low problem recognition are less likely to be motivated to stay and engage in treatment (Cady et al., 1996; Grella & Joshi, 2003). When thinking errors, such as adolescent perceptions that drug use is 'normal,' combine with drug use and perceived peer use, treatment engagement may be hindered as adolescents may have lower readiness for treatment and lack a desire for help. This study focused specifically on social and cognitive expectancies to address how these potential thinking errors relate to treatment motivation and engagement among adolescents.

According to Prochaska and DiClemente (1986), motivation progresses in stages with problem recognition being at the forefront. When individuals recognize their problems, they will show greater desire for help and report greater readiness for treatment. When adults in treatment report a desire for help, they are less likely to drop out early (Simpson & Joe, 1993), and highly motivated individuals are twice as likely to participate actively in treatment (Simpson, 2004). Research has shown that motivation is among the best predictors of engagement (Joe, Simpson, & Broome, 1999). If adolescents tend not to acknowledge personal problems, it stands to reason that their desire for help would also be low. Thus, lack of problem recognition, lower desire for help, and low readiness for treatment can be barriers to engagement.

As the first main step towards recovery, engagement is a crucial aspect of successful drug treatment (Simpson, 2004; Simpson & Joe, 1993, 2004). Conceptually, engagement captures the degree to which clients actively participate in treatment not only in terms of attendance, but also in terms of satisfaction and perceptions of personal progress (Joe, Simpson, & Broome, 1999). A highly engaged client is one who attends sessions, actively participates in discussions, makes progress on treatment goals, is satisfied with the treatment being provided, and has developed a positive therapeutic alliance with the counselor (Broome, Joe, & Simpson, 2001). For instance, higher session attendance predicts both counselor rapport and long-term retention, and individuals who report high counselor rapport are twice as likely to report positive psychological functioning during treatment (Simpson & Joe, 2004). Research with adults has shown that clients who have higher levels of engagement are more likely to stay in treatment and have better post-treatment outcomes (Broome et al., 2001; Joe et al., 1999; Simpson, Joe, Rowan-Szal, & Greener, 1997). Therefore, examining the engagement process among adolescents is crucial for understanding the treatment process and improving outcomes for youth.

While much is known about motivation and engagement within adult populations (e.g., Broome et al., 2001; Landrum, Knight, & Flynn, 2012; Simpson, 2004; Stanton, 2004), research examining motivation and engagement with adolescents in drug treatment is sparse (Broome et al., 2001; Wong, Hser, & Grella, 2002). Similar to studies of adult motivation, adolescents who have higher desire for help were more likely to comply with treatment goals and stay for the duration of treatment (Wong et al., 2002). Other studies examining engagement among adolescents point to the importance of family and peers. For instance, exposure to family and peers who use alcohol and drugs is a positive predictor of adolescents' readiness for treatment (Broome et al., 2001). This exposure to drug using family members and peers suggests that being attuned to the negative consequences of drug use may increase readiness for treatment. However, if these social connections with others who use drugs continue, the risk of returning to drug use following treatment may

increase because individuals with a deviant peer network are three times more likely to use cocaine one year later (Broome, Simpson, & Joe, 2002).

Because adolescents are heavily influenced by their social environment, and judgment and decision making is sometimes compromised by thinking errors, there is reason to suspect that the process of treatment engagement may be very different for adolescents than adults. Adolescent decision making and judgment (specifically prior drug use) are likely related to social and cognitive expectancies which can include potential false beliefs and expectations or thinking errors (e.g., higher perceived use by peers, normalcy of behavior). This paper seeks to address the gap in the literature by proposing and testing a model of treatment engagement for adolescents that incorporates the Theory of Planned Behavior (Ajzen, 1991).

Theory of Planned Behavior

The Theory of Planned Behavior (TPB; Ajzen, 1991) proposes that attitudes towards a behavior, the subjective norm, and perceived behavioral control influence intentions to perform the behavior which in turn predicts actual behavior (see Figure 1 for depiction of Ajzen’s theory applied to motivation and engagement in treatment).

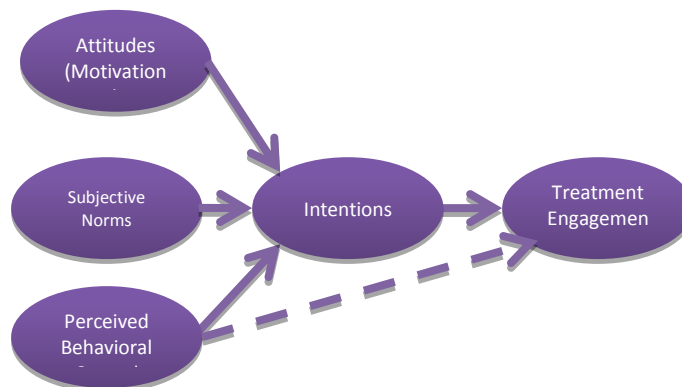


Figure 1. Ajzen’s Theory of Planned Behavior Model Applied to Motivation and Engagement in Treatment.

Attitudes about the behavior form a favorable or unfavorable assessment of the behavior, subjective norms reflect the perceived social pressure to perform or not perform the behavior, and perceived behavioral control reflects a perception of the ease or difficulty of performing the behavior. The more resources and fewer obstacles perceived, the greater the perceived behavioral control. According to Ajzen, perceived behavioral control should directly influence behavior (i.e., engagement) when it measures actual control, otherwise it predicts intention to perform the behavior (i.e., intentions). Individuals with a more favorable attitude towards the behavior, a more positive perceived social norm, and greater perceived behavioral control should have stronger intentions to perform the behavior (Ajzen, 1991). TPB has been used to successfully predict a wide range of behaviors from job searching to weight loss (Ajzen, 1991), but the relative importance of attitudes, norms, and behavioral control in predicting intentions has been found to vary across behaviors and situations.

TPB and modified versions have been used to predict addictive behaviors including drug and alcohol use. TPB has been successful in accounting for variation in intentions to use and reported use of amphetamines, marijuana, ecstasy, and LSD over a period of six months with a sample of undergraduate students (McMillan & Conner, 2003). Specifically, when a student reported a positive attitude towards using the drug, perceived greater social pressures to use the drug, and reported factors that facilitate rather than hinder drug use, the student reported greater intentions to use the drug (McMillan & Conner, 2003). In a similar study assessing intentions to drink alcohol in young adults, Zimmermann and Sieverding (2010) found that subjective norms positively predicted intentions in women but not men. While having a positive attitude and reporting fewer barriers to drinking positively predicted drinking intentions and behaviors in both men and women, reporting higher perceived social pressures to drink was only positively related to intentions and behaviors for women. TPB has also been used to predict prescription drug use among illicit and non-illicit young adult users (Judson & Langdon, 2009). While attitudes and perceived behavioral control predicted drug use for both groups, subjective norms did not predict prescription drug use. Illicit users of prescription drugs reported less concern with safety and ethics, greater perceived social acceptability

of use, and less perceived behavioral control than their non-illicit counterparts. In a recent meta-analysis, Topa and Moriano (2010) attempted to synthesize findings from 35 studies applying TPB to smoking intentions and found that attitudes, subjective norms, and perceived behavioral control all significantly predicted smoking intentions. Those who had a favorable attitude, higher perceived social pressures, and higher perceived control had higher smoking intentions and consumed more cigarettes.

Subjective norms, attitudes, and perceived behavioral control reflect social and cognitive expectancies, beliefs regarding the desired outcome of a behavior, that should impact intentions and actual behavior. Specifically, when someone believes their behavior conforms to a perceived norm, reports positive attitudes towards the behavior, and reports fewer barriers, the intention to perform the behavior should increase. These social and cognitive expectancies can compromise intentions and engagement when adolescents have low attitudes towards the behavior, see themselves as conforming to a perceived norm, and report obstacles and barriers that would prevent them from performing the behavior.

Other studies utilizing TPB have added other variables including measures of past behavior as additional predictors. Hoie, Moan, and Rise (2010) used TPB with the additional variable ‘past attempts to quit’ to predict intentions to quit smoking and found that past attempts was the strongest positive predictor of intentions followed by norms, perceived behavioral control, and lastly by attitudes.

Likewise, Moan and Rise (2006) found that perceived behavioral control and past behavior (e.g., how often, how much, etc.) accounted for the most variation in smoking reduction one year later in a sample of adolescents. When students reported more barriers to quitting and had been smoking longer and using greater amounts, they reported lower intentions to quit and greater use compared to their counterparts. Using TPB to predict intentions to use marijuana in young mothers, Morrison et al. (2010) also included measures of past behavior – drug use as an adolescent, drug use in a social setting – as well as emotional distress, and environmental adversity as predictors of attitudes, norms,

and behavioral control. Their design conceptualized Ajzen's original predictors as mediators of the prior behavior—intentions relationship. These antecedent variables were previously shown to predict marijuana use and were significant predictors of the TPB variables. However, when measures of prior behavior were included, only attitudes and behavioral control predicted intentions to use and actual use one year later, while subjective norms did not. Together, these studies suggest that while attitudes, norms, and perceived control are important, prior behavior also plays an important role in intentions.

While TPB accounts for intentions and actual use of drugs, the theory has also been used to explain drug treatment utilization (Kleinman, Millery, Scimeca, & Polissar, 2002). Attitudes about the treatment, subjective norms, and perceived behavioral control all positively predicted intentions to enter treatment with subjective norms being the weakest predictor. Intentions to enter treatment positively predicted treatment utilization 30 days after detoxification (Kleinman et al, 2002). Other studies also lend support to the application of TPB to predict compliance with prescribed medication (Hounsa, Godin, Alihonou, & Valois, 1993; Lechuga-Besné, Riveros-Rosas, & Sánchez-Sosa, 2009) and adherence to antiretroviral therapy for clients with HIV (Kagee, 2008). In all cases, favorable attitudes about the treatment, perceived favorable social influences, and fewer barriers to utilizing the treatment predicted greater intentions to utilize the treatment which predicted actual treatment utilization.

These studies give credence to the utility of TPB in understanding some of the mechanisms behind motivation and engagement. TPB serves as the basic theoretical framework for a hypothesized model describing adolescent engagement in treatment. While a complete measure of perceived behavioral control is not available, a measure of perceived social support is included in the model to capture the perceived social resources with regard to resisting drug use. An individual measure of perceived obstacles or barriers is not available and thus does not capture perceived behavioral control completely. The theoretical model includes measures of attitudes, subjective norms, social support, intentions, and behavioral measures. Specifically, motivation is conceptualized as a measure of

attitudes; subjective norms are conceptualized as measures of perceived social acceptability of the behavior; perceived social support is conceptualized as a measure of social resources. Attitudes, subjective norms, and social support are predicted to impact intentions to resist drugs. As measures of social and cognitive expectancies, attitudes, subjective norms, and social support reflect the beliefs regarding the desired outcome of resisting drugs. Intentions to resist drugs should predict actual behavior –in this case, engagement in the treatment process. Given the literature that included past behavior as an additional predictor of behavior (Hoie et al., 2010; Moan & Rise, 2006; Morrison et al., 2010), a measure of prior drug use is also included in the model.

Social Influences

Studies utilizing TPB to predict drug use and treatment utilization have typically shown subjective norms to be a weak or non-significant predictor (Judson & Langdon, 2009; Kleinman et al., 2002; Morrison et al., 2010). This is interesting given the abundance of literature on the influential role of family and peers with adolescents (Broome et al., 2001, 2002; Dinges & Oetting, 1993; Hawkins et al., 1992; Henry, 2008; Swadi, 1992), and may reflect the fact that most of Ajzen’s work has been with adult populations. To further explore mechanisms important for adolescent populations and to account for social influences, a re-conceptualization of Ajzen’s model will be explored that incorporates elements of the Primary Socialization Theory (Oetting & Donnermeyer, 1998) and Social Norms Theory (Berkowitz, 2003).

Ajzen himself (1991) states that the construct ‘subjective norms’ tends to be the weakest predictor of intentions to perform a behavior, and indeed the literature utilizing TPB to predict drug use and treatment utilization holds true to this description (Judson & Langdon, 2009; Kleinman et al., 2002; Morrison et al., 2010). Compared to adults, youth are more susceptible to social norms and influences (e.g., Harris, 2000). Family and peers can have both negative (e.g., increased drug use) and positive (e.g., higher engagement) influence on an adolescent’s drug use and treatment efforts. Specifically, adolescents are at a greater risk for using drugs and alcohol when siblings and parents use drugs and alcohol (Hawkins, Catalano, & Miller, 1992). Greater family conflict and poorer

family bonding are also related to greater drug use in adolescents (Gutman, Eccles, Peck, & Malanchuk, 2011). On the other hand, parents can have a positive influence on their adolescent's engagement in treatment. When parents report greater expectations for their adolescent's educational achievement, adolescents have higher engagement in substance abuse treatment (Dakof et al., 2001). Other research has shown that youth who believe that adults disapprove of teenage smoking are significantly less likely to smoke than those who do not hold this belief (Eisenberg & Forster, 2003). As previously mentioned, deviant peer relations can initially be a positive predictor of treatment readiness (Broome et al., 2001), but they also have the potential to negatively impact the treatment process with higher rates of relapse (Broome et al., 2002).

Above all, research has shown that affiliation with drug-using peers is among the strongest predictors of adolescent drug use (Dinges & Oetting, 1993; Hawkins et al., 1992; Henry, 2008; Swadi, 1992). There is reason to suspect that peer influences will also affect the treatment process. Considering both the Primary Socialization Theory (Oetting & Donnermeyer, 1998) and Social Norms Theory (Berkowitz, 2003) can help to further illuminate the role of social influences on intentions towards drug use and engagement in treatment.

Primary socialization theory. According to the Primary Socialization Theory (PST; Oetting & Donnermeyer, 1998), an adolescent does not act alone but rather internalizes modeled behavior by observing those around him or her. Family, peers, and school are considered the primary socialization sources and are thought to influence deviant behavior. Deviance (including risky behavior) is thought to arise from bonding with deviant peers. It is theorized that adolescents using drugs are involved with peers who provide access to illegal substances and support the use of them. According to this theory, attitudes about risky behavior go hand in hand with socialization. If attitudes toward drug use are reinforced by peers, the behavior keeps occurring. Exposure to drug using friends and family can initially increase treatment readiness (Broome et al., 2001). However, if prosocial bonding does not occur and the adolescent continues to associate with deviant peers the adolescent's attempts to resist drugs will not be reinforced.

Supporting PST, low family connectedness and peer use of drugs predicted greater alcohol and marijuana use by adolescents (Francis & Thorpe, 2010). In a similar study, as family conflict increased and family social support decreased, the likelihood of using drugs increased in adolescents (Lopez et al., 2001). While family and peers can have negative influences on adolescents with increased drug use, they can also influence positive changes. An example of this positive influential effect can be found in Dakof et al.'s (2001) work with adolescents. Youth engaged in substance abuse treatment reported higher parental expectations for their educational achievement and reported more family conflict. Additionally, adolescents were more likely to be engaged in treatment when they reported higher family conflict and more association with deviant peers (Connell, Dishion, Yasui, & Kavanagh, 2007).

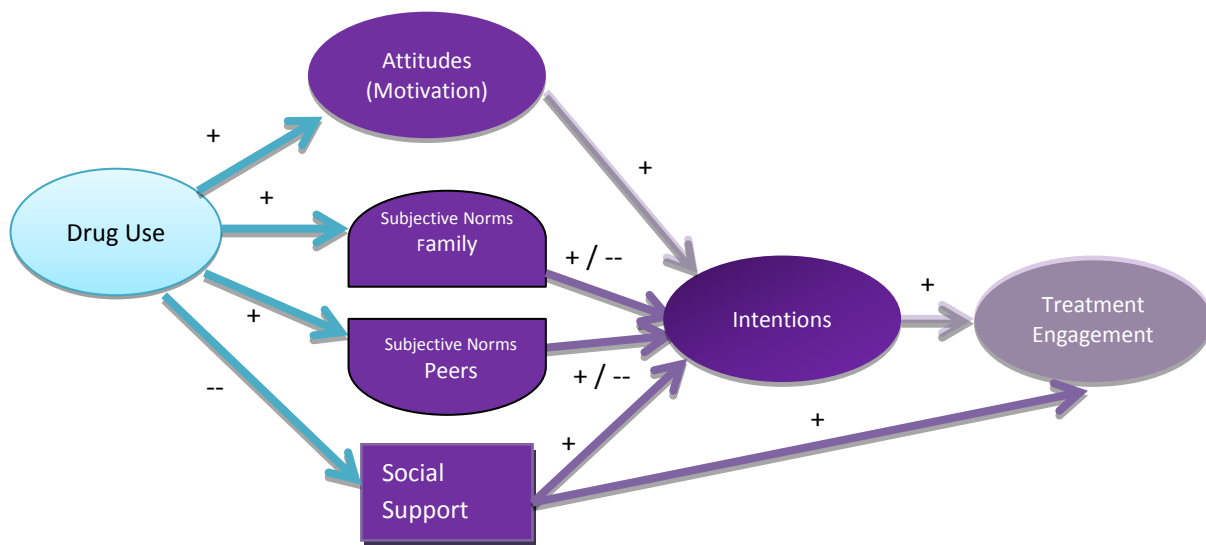


Figure 2.Theoretical Model: Primary Socialization Theory Modifications to TPB.

PST and related literature suggest specific refinements to Ajzen's model. First, subjective norms should distinguish between family and peer influences. Second, an additional construct, prior drug use, should be included in the model when applying it with drug users relating to subjective norms, or the perceived social acceptability of using drugs, as well as attitudes towards the behavior. The current study hypothesises that subjective norms and attitudes will mediate the relationship between prior drug use intentions (see Figure 2). Third, perceived behavioral control should include a

measure of perceived social support with regard to resisting drugs. An adolescent is not isolated in treatment, according to PST, and when the social environment supports the behavior (i.e., non-use), intentions to resist should be bolstered. In response to both Ajzen's claim that subjective norms was the weakest predictor of intentions, and the influential role of peers and parents on adolescents, these refinements to TPB propose that subjective norms distinguish between association with deviant peer groups and poor family functioning (family conflict, lack of family warmth) and a measure of social support should be included in the model. More drug use should be positively associated with greater readiness for treatment and be related positively to intentions and social support towards resisting drug use based on the findings of Broome et al. (2001) but could also be a negative relationship when peer deviance and family dysfunction promote using drugs. These extensions create a model that is more consistent with the literature on the importance of social factors in adolescent thinking. To further illuminate the role of perceived peer norms in relation to intentions, we turn to Social Norms Theory.

Social norms theory. Social Norms Theory (SNT; Berkowitz, 2003) postulates that people act in response to a perceived norm. While this generally accounts for prosocial and adaptive behavior, faulty thinking (assumptions, misattributions, impulsive conclusions, etc.) can lead to misperceptions and result in faulty conclusions (Berkowitz, 2003). In the case of adolescents, misperceptions could be attributed to thinking errors or to a lack of perspective (e.g., minimal exposure to prosocial norms and values). Research has shown that adolescents who use drugs and alcohol overestimate the degree to which their peers engage in these behaviors (Martens et al., 2006; Wolfson, 2000) and behave according to this misperceived norm even when it differs from their values (Baer, Stacy, & Larimer, 1991; Berkowitz, 2003; Bustamante et al., 2009; Miller & McFarland, 1987). When students were asked to report drinking norms among their peers, almost all reported that peers drank more than the peers themselves reported. Moreover, students tended to estimate higher drug use among their social groups than the average taken from self-reports (Baer, Bustamante, Henry, Kobus, & Shoeny, 2011). When overestimation occurs, male students have been

shown to shift their attitudes and behaviors over time to conform to these misperceived norms (Prentice & Miller, 1993) suggesting that the perceived social norm may promote substance use.

Similar findings can be found within adult samples. Frone and Brown (2010) found that when employees perceived a favorable attitude towards substance use from their own coworkers and reported greater frequency of use by coworkers, employees engaged in higher drug and alcohol use themselves. This ‘false consensus effect’ reflects the degree to which individuals perceive their own behavior as conforming to social norms and may lead to justification of their own risky behavior. In the case of adolescents, some may compare their own use to perceptions of ‘norms,’ and view their own drug use as a normal part of growing up.

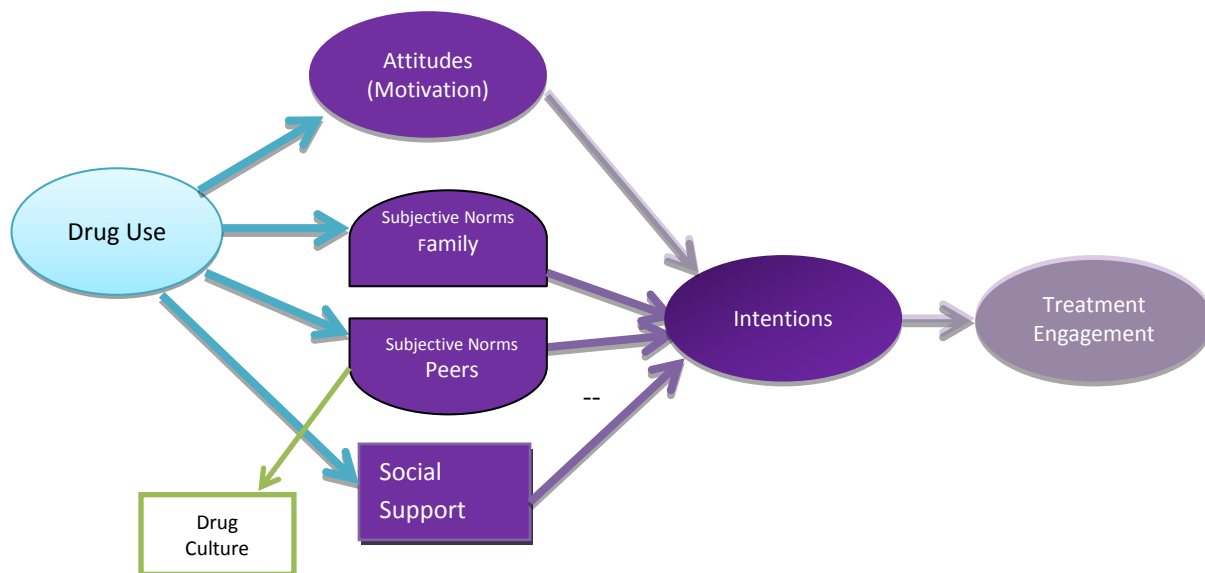


Figure 3. Social Norms Theory Modifications to TPB.

This perception of drug culture as normal reflects part of the subjective peer norms in Ajzen’s model and should be included as part of a measure of perceived acceptability of drug use and perceived normalcy, a thinking error. High scores on a drug culture measure would indicate that drug use is viewed favorably and perceived to be ‘normal’ among one’s social group. Subjective peer norms should mediate the relationship between prior drug use and intentions and social support to resist using drugs. However, according to SNT, the relationship between subjective norms as an

indicator of misperceived norms should negatively influence intentions to resist drug use. Thus, the modified TPB depicted in Figure 3 incorporates elements of SNT to reflect the importance of acting in response to perceived social norms.

Current Study

In the current study, a modified TPB was proposed that incorporated the addition of prior drug use and expanded subjective norms to distinguish between peer and family influences reflecting the plethora of literature citing the importance of social influences on adolescent thinking and motivation (Broome et al., 2001; Dakof et al., 2001; Hawkins et al., 1992; Gutman et al., 2011). This model of adolescent treatment engagement proposed specific ways in which social influences and cognitive expectancies predicted intentions and engagement in treatment. Conceptually, the model specified the degree to which social influences (as measured by subjective peer and family norms as well as perceived social support) and cognitive expectancies (attitudes) were influenced by judgment and decision-making (prior drug use). These social and cognitive expectancies were hypothesized to predict intentions and treatment engagement. Attitudes towards treatment comprised a measure of desire for help, treatment readiness, and problem recognition, three scales that typically characterize motivation. Together, these form attitudes towards treatment which assessed the adolescent's desire and need to be in treatment and readiness to be in treatment. Subjective norms comprised two measures, one regarding perceived family functioning and another regarding perceived peer acceptability of drug use. Perceived social support was measured by a single scale which reflected the support from friends and family with regard to recovery. Intentions to resist drugs comprised two measures of perceived ability and intentions to resist drugs. As one of the major goals of treatment, resisting drug use is crucial to the treatment process and intentions to resist were conceptualized as an intention to achieve one of the goals of treatment.

Five specific hypotheses were tested using a sample of youth in residential treatment for substance abuse. Figure 2 depicts the theoretical model with the expected directional path coefficients.

The first three hypotheses test the relationships originally proposed by Azjen's TPB and incorporate the elements of social influences in the re-conceptualization of the constructs.

Hypothesis 1a: Attitudes will be positively associated with intentions to resist drug use.

Hypothesis 1b: Subjective norms, a construct comprised of both family functioning and peer acceptability of drug use, will be related to intentions to resist drug use.

Hypothesis 1c: Perceived social support will be positively associated with intentions to resist drug use.

Hypothesis 2: Intentions to resist drug use will be positively associated with engagement in treatment.

Hypothesis 3: Perceived social support will directly predict engagement in treatment.

The fourth hypothesis tested the inclusion of prior drug use in the model whereby attitudes, subjective norms, and social support were mediators of the relationship between drug use and intentions.

Hypothesis 4a: Attitudes towards treatment will mediate the relationship between drug use and intentions.

Hypothesis 4b: Subjective norms will mediate the relationship between drug use and intentions.

Hypothesis 4c: Perceived social support will mediate the relationship between drug use and intentions.

Hypothesis five tested gender as a moderator for the relationships in the theoretical model. Some of the relationships, specifically the role of social influences, in the final model are expected to differ between males and females.

Hypothesis 5: Gender will be a moderator for the relationships in the final model.

In conclusion, drug use will influence intentions indirectly through attitudes, subjective norms, and social support which will influence intentions directly. Intentions at intake as well as perceived social support will directly predict engagement in treatment 30-45 days later. The

theoretical model (see Figure 2) contains only the hypothesized relationships between the latent variables. Attitudes, subjective norms, social support, and intentions were measured at intake and thus causality cannot be inferred from the model.

Method

Participants

Participants were drawn from a sample of clients admitted to seven adolescent residential substance abuse treatment programs, representing three parent organizations or agencies, located in California, New York, and Texas as part of the Extending Drug Abuse Treatment and Assessment Resources (DATAR 5) project. Programs were recruited with the assistance of the national Therapeutic Communities of America Association. All agreed to adopt a series of assessments as part of their clinical practice, and all entered into a Qualified Service Organization Agreement whereby unidentified data is provided to the research team in exchange for assessment tools and evaluation services. Two programs, located in Texas and California, are fairly large with a capacity of 120 or more and a planned length of stay ranging from 45 days to 12 months. The program in Texas is rural but serves large urban and rural areas while the program in California is primarily urban. Three programs in New York are smaller with capacities ranging from 40 to 65 clients. Two programs are urban and the third is suburban and all have planned length of stay ranging from 3 to 12 months. The other two programs are located in suburban areas in California and Texas with capacities around 30 clients. One program in Texas has a planned length of stay ranging from 30 days to 4 months while the other program ranges from 6 to 12 months.

The total sample size for this study was 407 adolescent clients admitted between December 2010 and November 2011. The sample was primarily males (67%), 66% Hispanic ethnicity, 39% Caucasian, 7% Black/African American, and 12% mixed race. Ages range from 13 years to 18 years, with an average age of 15.7. Drugs of use primarily include marijuana, followed by selecting none, alcohol, methamphetamines, cocaine, and heroin (including “cheese heroin,” i.e.,

over-the-counter cold medications combined with black tar heroin). Within the seven programs, one out of two clients (50%) are juvenile justice-involved.

Procedure

All new admissions to these programs completed assessments using an online assessment system at three time points: at admission, between 30-45 days, and 60-90 days. The ranges on assessment time points varied depending on the program's planned length of stay with tighter assessment schedules in shorter (i.e., 2 month) programs. The data for this project included only the initial and second assessment. The initial set of assessments consisted of a set of TCU forms adapted specifically for adolescents and assessed various domains including drug use, deviancy, thinking patterns, psychosocial functioning, motivation, and relationships with family and friends. At time two (day 45), selected assessment measures from time 1 were repeated (thinking, motivation, psychosocial functioning) and measures of treatment engagement were added. All of the research methods and procedures were reviewed and approved by TCU's Institutional Review Board (IRB) and by the specific agency's IRB when required.

Measures

For this adolescent population, adult versions of the TCU Risk form, Drug Screen II (Knight, Simpson, & Hiller, 2002), Client Evaluation of Self and Treatment (CEST; Joe, Broome, Rowan-Szal, & Simpson, 2002; Knight et al., 2011), and Family and Friends (Simpson & McBride, 1992) were modified and adapted by ensuring they were at a 6th grade reading level, revising wording that adolescents may have difficulty understanding, and adding questions that were specific to adolescent issues. For the drug screen and risk forms, clients were asked to respond yes or no to questions regarding their drug use, deviant behaviors, and basic demographic information. The other assessments utilized a Likert-type scale ranging from one to five with one indicating "Disagree Strongly" and five indicating "Agree Strongly." Composite scores were rescaled to range from 10 to 50. In addition to the established set of TCU forms, newly created instruments assessed areas related to thinking including decision-making and attention that were thought to interfere with treatment

engagement (Becan et al., 2011; Landrum et al., 2011). These new assessments also utilized the five point Likert scale. Preliminary psychometrics indicated that the scales have generally good reliability comparable to adult populations. Psychometric properties of the scales for adolescents reported herein were preliminary and data collection is ongoing. See Appendix A for a list of the individual items comprising each of the measures below and see Figure 4 for an illustration of the measurement model.

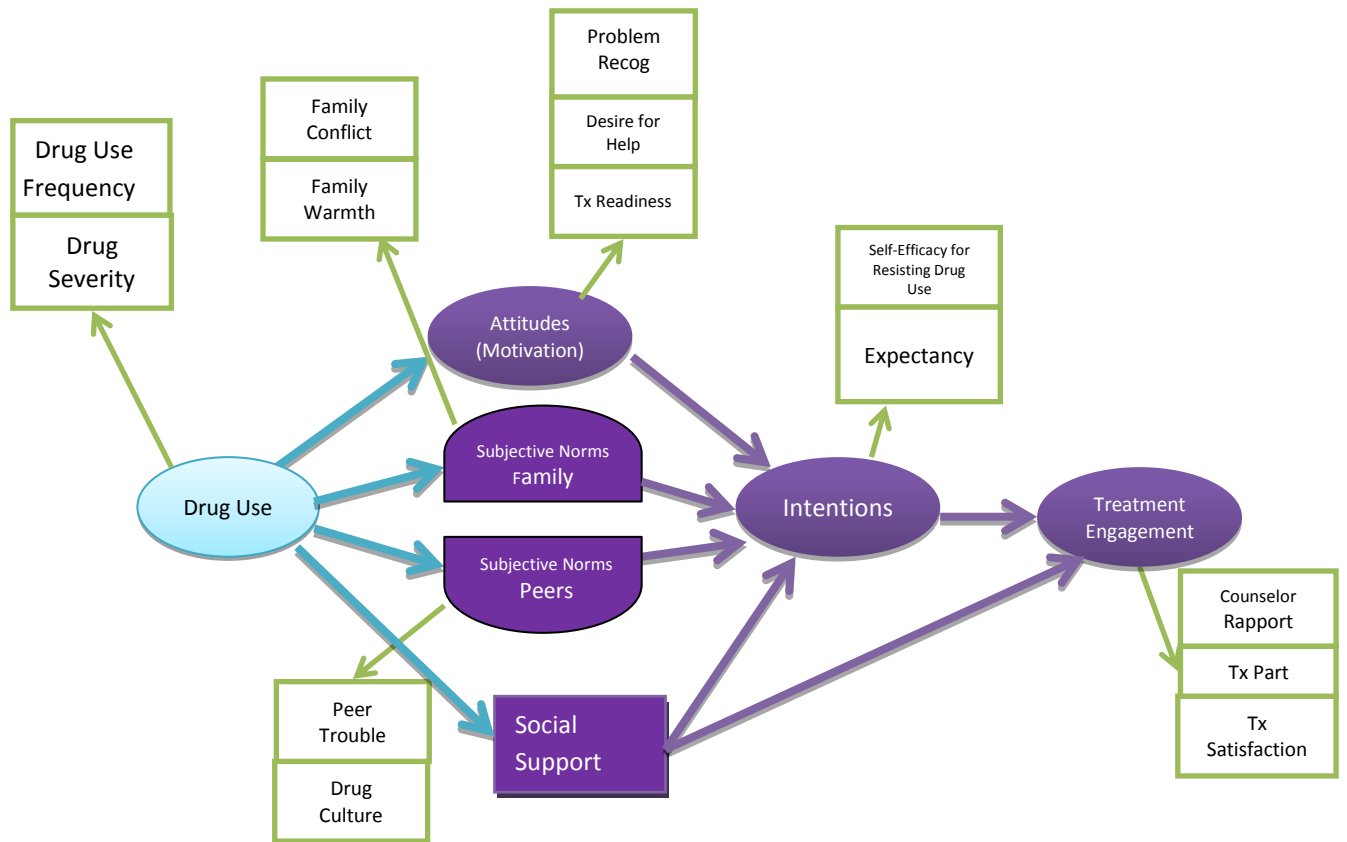


Figure 4. Measurement Model

Demographics. Basic demographic information including gender, race and ethnicity, and age were taken from the TCU risk forms.

Attitudes. The attitudes construct reflected *Motivation* for treatment and comprised three scales measured at both time one and time two (*Desire for Help, Treatment Readiness, and Problem Recognition*) using the CEST (Joe et al., 2002; Knight et al., 2011). *Desire for Help* was measured by six items ($\alpha = .83$, Knight et al., 2011) that assessed recognition of needing help (e.g., “You need help

dealing with your drug use” and “You want to get your life straightened out”). *Treatment Readiness* was measured by eight items ($\alpha = .83$) that assessed willingness to be in treatment (e.g., “You want to be in drug treatment”) and external pressures to be in treatment (e.g., “You are at this treatment program only because it is required [reversed item]”). *Problem Recognition* was measured by 10 items ($\alpha = .89$) that assessed a recognition that drug use is causing problems in life (e.g., “Your drug use is a problem for you” and “Your drug use is causing problems with school attendance”). Together, these items assessed attitudes towards treatment reflecting the adolescent’s desire to be in treatment, a need to be in treatment, and their readiness to be in treatment.

Subjective norms. Subjective norms was divided into two parts reflecting family dysfunction (*Family Warmth and Family Conflict*) and peer deviancy (*Peer Trouble, Drug Culture, and Peer Socialization*) and was measured using the Family and Friends scale (Simpson & McBride, 1992). Seven items constituted *Family Warmth*, which assessed involvement of parents (e.g. “Your parents pay attention to what you say”) and family support (e.g., “When you have a problem, your family will stand by you”) and was reverse coded to be a measure of family dysfunction. *Family Conflict* was measured with five items asking about conflicts and arguments that occur at home (e.g. “Your family members often yell at each other” and “There are lots of arguments or fights in your family”). Seven items comprised *Peer Trouble*. These items asked about specific deviant activities of friends (e.g., “You have friends who have been in trouble because of alcohol or drug use” and “You have friends who have dropped out of school”). *Drug Culture* was measured by seven items ($\alpha = .83$, Landrum et al., 2011) that characterizes the drug culture, a measure of favorability of drug use and the degree to which their own drug use is perceived as ‘normal.’ The items ranged from general norms (e.g., “It is normal to use alcohol when you are a teenager”) to specific occasions (e.g., “Drugs help make a party better”). *Peer Socialization* was measured by six items that asked about general peer activities (e.g., “Most of your friends want to complete more school” and “You have friends who often volunteer time to help others”). *Peer Socialization* was reverse coded so that the latent variable

“Subjective Peer Norms” reflected deviant peer relationships, acceptability of drug use, and perceived normalcy of drug use.

Perceived social support. The measured variable, perceived social support (Joe et al., 2002), was assessed by nine items comprising perceived support from friends and family with regard to recovery and included items such as “You have good friends who do not use drugs” and “You have people close to you who motivate and encourage your recovery.”

Drug use. Drug use consisted of two measures, a composite score of drug severity and frequency of drug use. The TCU Drug Screen II (Knight et al., 2002), modified for adolescents, contained nine items regarding drug-related behaviors, including “Did you use larger amounts of drugs or use them for a longer time than you planned or intended.” Drug use severity scores are an index of the number of items clients responded affirmatively to out of the possible 9 items. Measures of frequency of drug use were a composite measure created from answers on the frequency of using a list of 13 drugs. Clients were asked how often they used these substances in the past 12 months on a scale ranging from ‘Never,’ ‘Only a few times,’ ‘1-3 times per month,’ ‘1-5 times per week,’ and ‘About every day.’

Intentions. The construct intentions comprised two measures: *Expectancy* and *Self-Efficacy for Resisting Drug Use*. *Expectancy* was measured by four items that assessed the perceived likelihood of relapsing and using more drugs (e.g., “You are likely to feel the need to use drugs in the next few months” and “You are likely to relapse in the next few months”). *Self-efficacy for resisting drug use* was measured by 5 items ($\alpha = .83$, Becan et al., 2011) that assessed confidence in resisting drugs (e.g., “I am confident that I can find things to do that I enjoy that don’t involve alcohol/drugs”) and situations where drugs are present (e.g., “I am confident that I can avoid situations and people where alcohol/drugs are present”). *Expectancy* was reversed coded so that the latent variable “Intentions” reflected a measure of perceived likelihood of resisting drugs.

Treatment engagement. Engagement was assessed only at time 2 because individuals who have been in treatment for less than 30 days were not deemed to have been in treatment long

enough to develop a relationship with a counselor, attend sessions on a regular basis, or assess their satisfaction (Simpson, 1979; Simpson, 1981). Engagement comprised three scales: *Treatment Participation*, *Treatment Satisfaction*, and *Counselor Rapport* (Joe et al., 2002; Knight et al., 2011). Twelve items were used to assess *treatment participation* ($\alpha = .89$, Knight et al., 2011) and included an overall assessment of participation (e.g., “You always participate actively in your counseling sessions”) as well as attendance (e.g., “You always attend the counseling sessions scheduled for you”). *Treatment Satisfaction* included six items ($\alpha = .82$) that ranged from a broad assessment (e.g., “You are satisfied with this program”) to specific aspects of treatment (e.g., “You can get plenty of personal counseling at this program”). *Counselor Rapport* comprised 12 items ($\alpha = .94$) that assessed the client’s relationship with their counselor (e.g., “You trust your counselor”) and specific counselor qualities (e.g., “Your counselor is well organized and prepared for each counseling session”).

Statistical Analyses

Structural Equation Modeling (SEM), using the software package LISREL (Jöreskog & Sörbom, 2006), was conducted to evaluate the model presented in Figure 2. SEM was particularly well suited for this analysis because it allowed for the identification of complex relationships between latent variables that were free from the individual measurement error of the measured items. A two-step analysis approach was utilized. First, the manifest model, which specified the individual measurements comprising the latent variables, was tested using confirmatory factor analysis. Next, the theoretical model tested the direct and indirect links between drug use, attitudes, subjective norms, and social support to intentions, whether attitudes, subjective norms, and social support mediated the relationship between drug use and intentions, and if intentions predicted engagement.

The fit of the theoretical model was assessed using the root mean square error of approximation (RMSEA), relative fit index (RFI), and the normed fit index (NFI) rather than the chi square which was more sensitive to sample size (Gifford, 2006; Kenny, 2011; Schumacker & Lomax, 2010). To compare models, standardized root mean square residual (SRMR), comparative fit index

(CFI), and Akaike Information Criterion (AIC) were used (Kenny, 2011; Schumacker & Lomax, 2010). All missing data were removed with the sample including only clients who completed all the measures at intake and again at time two. The LISREL analyses were conducted using maximum likelihood estimates.

To assess mediation, additional regression analyses were performed according to Baron and Kenny's (1986) three criteria: 1) the relationship between the independent variable and the mediator must be significant; 2) the relationship between the mediator and the dependent variable must be significant; 3) the strength of the combined relationship between the independent variable and the mediator on the dependent variable is more than the effect of the independent variable on the dependent variable. The Sobel test was used to assess the indirect effect of the independent variable on the dependent variable. If the direct links were insignificant or significantly lower than the indirect links (using the Sobel test), then mediation has occurred.

Results

To assess the identification of the latent variables, confirmatory factor analysis revealed an unacceptable fit with two suggested modifications to the indicators of the latent variables. Specifically, problem recognition and treatment satisfaction yielded a negative error variance for the latent variables attitudes and engagement, respectively. Examining the problem recognition scale, exploratory factor analysis yielded a three factor solution. The first factor comprised recognition of problems caused by drug use with regard to oneself, one's family, and with the law; the second factor comprised problems with health, death, and friends, and the third factor comprised problems with school. Including only the first factor within the latent variable attitudes yielded the best fit. This reduced problem recognition variable comprised five items (See Appendix A). Reflecting upon treatment satisfaction, these items typically apply to an outpatient setting and may be different for adolescents, as compared to adults, who may have external pressures to be in treatment from both family and the juvenile justice system. After removing these indicator variables, an acceptable model

was found (RMSEA = .08, RFI = .90, NFI=.94). Measures of reliability were also acceptable and can be found in Table 1 along with means and standard deviations.

Table 1. Measures and Descriptive Statistics

(N = 407)

Latent Variables	alpha	Indicator Variables	Mean	SD
Drug Use	0.69		17.92	(4.14)
		Drug Screen Score	13.75	(2.65)
		Drug Frequency	22.08	(6.46)
Subjective Norms Family	0.67		24.87	(7.89)
		Family Control	25.52	(8.96)
		Family Warmth (reversed)	24.23	(9.24)
Subjective Norms Peers	0.65		29.45	(6.14)
		Peer Trouble	34.25	(8.74)
		Drug Culture	26.53	(8.13)
		Peer Socialization (reversed)	27.58	(7.13)
Attitudes	0.89		33.09	(8.19)
		Problem Recognition 1 (oneself, family, law)	33.13	(10.14)
		Desire for Help 1	33.39	(8.69)
		Tx Readiness 1	32.76	(8.24)
Social Support	--	Social Support	37.53	(6.16)
Intentions	0.65		37.31	(6.92)
		Expectancy	38.13	(8.71)
		Self-Efficacy Resist Drugs	36.49	(7.87)
Engagement Time 2	0.9		39.28	(5.54)
		Tx Satisfaction	38.44	(6.40)
		Tx Participation	39.71	(5.42)
		Counselor Rapport	39.70	(6.19)

This revised theoretical model was tested and yielded a marginal fit (RMSEA = .09, RFI = .83 NFI = .84). Hypothesis one was partially supported with attitudes and perceived social support positively predicting intentions to resist drug use. Subjective peer norms negatively predicted intentions to resist drug use. However, subjective family norms did not significantly predict intentions to resist drug use. Removing this family variable from the model yielded a better fit (see Figure 5).

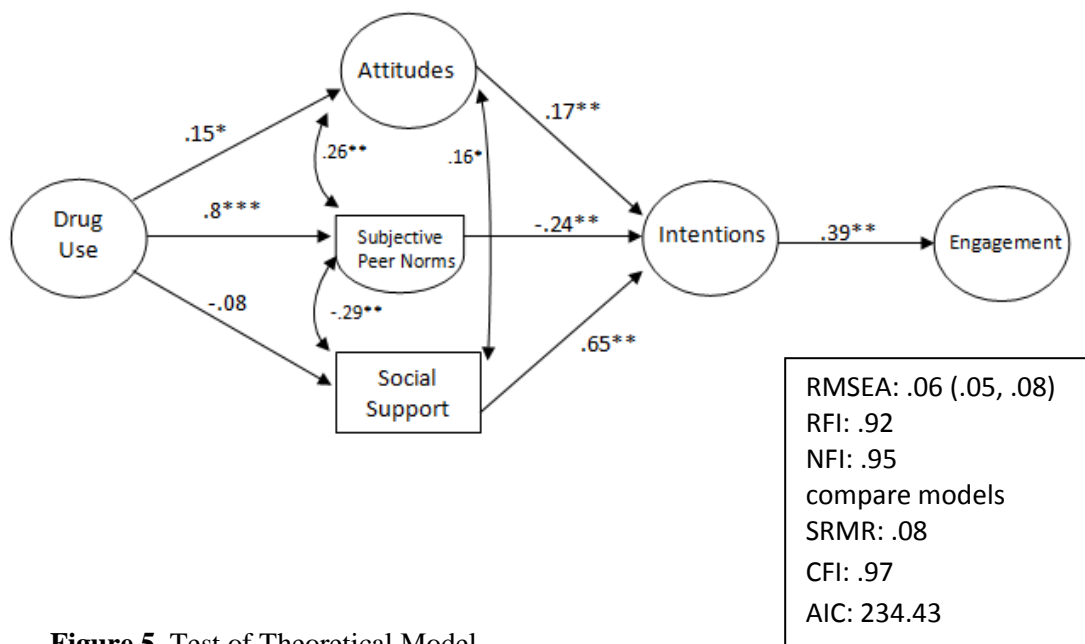


Figure 5. Test of Theoretical Model

Hypothesis two was supported with a positive relationship between intentions to resist drug use and engagement in treatment (see Figure 5). Hypothesis three was not supported as the direct relationship between social support and engagement was not significant (see Figure 6).

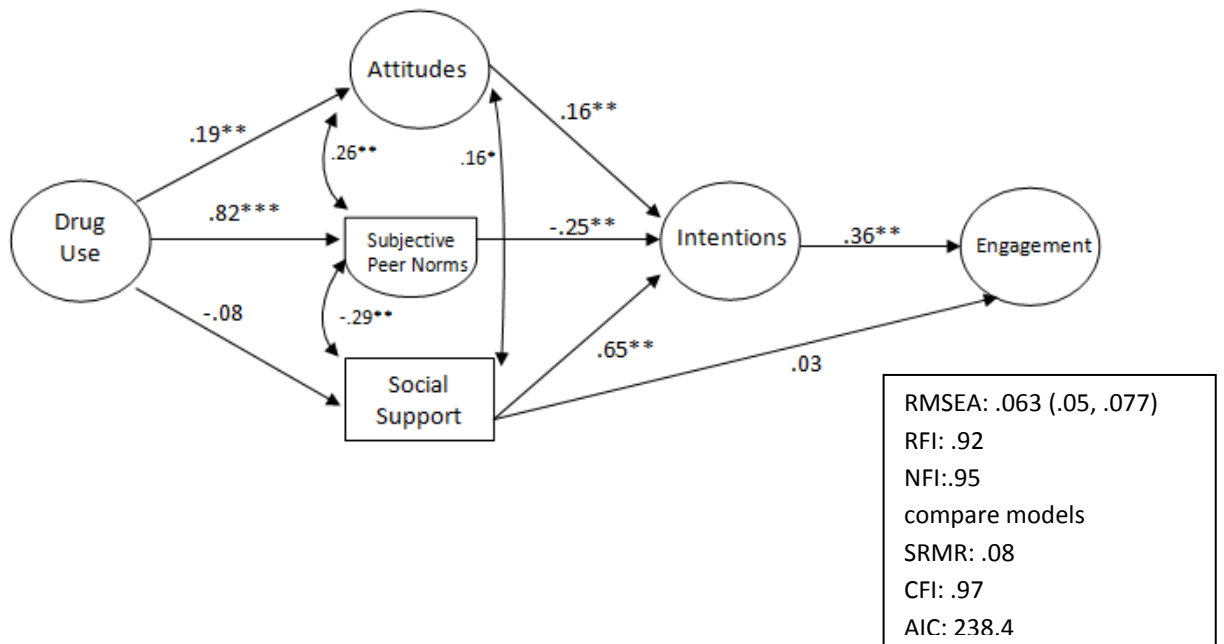


Figure 6. Test for Direct Link between Social Support and Engagement

Hypothesis four, a test of mediation, was assessed according to Baron and Kenny's (1986) criteria. This hypothesis was partially supported as attitudes fully mediated the relationship between prior drug use and intentions (Sobel = 3.64, $p < .001$) and subjective peer norms fully mediated the relationship between prior drug use and intentions (Sobel = -9.05, $p < .001$). Drug use, however, did not significantly predict social support. The link between drug use and social support was dropped from the model (see Figure 7). Because this criterion for mediation was not met, social support did not mediate the relationship between drug use and intentions.

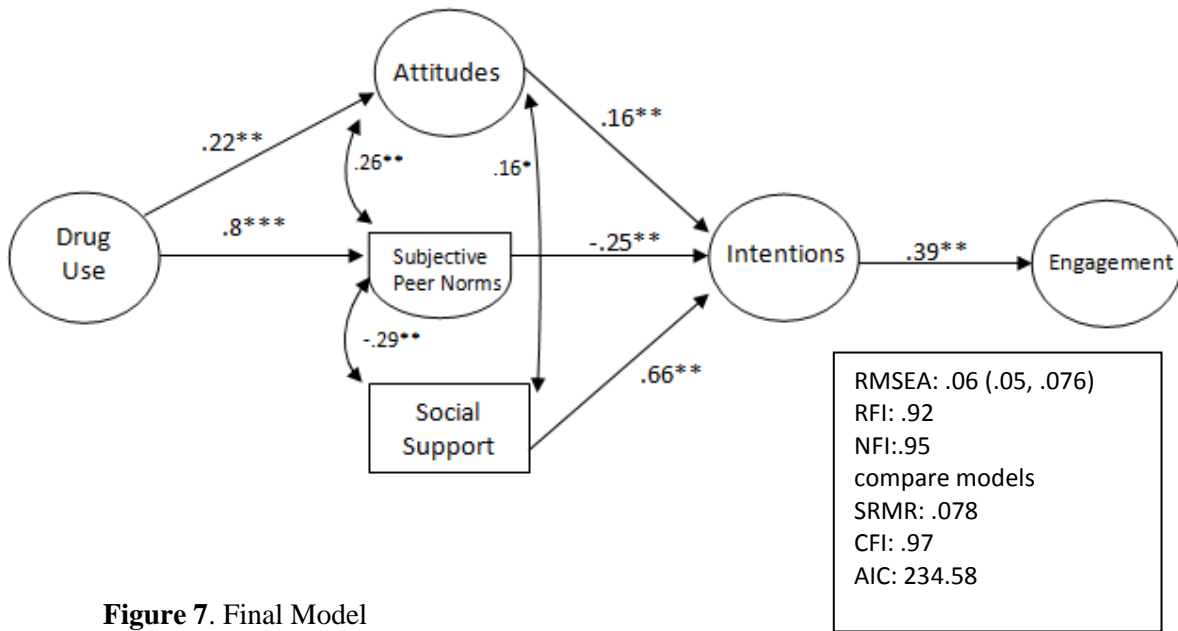


Figure 7. Final Model

While the first three hypotheses lend support to the utilization of Ajzen’s TPB to a model of adolescent engagement in treatment, these relationships were not sufficient on their own. To test A model without prior drug use was tested and yielded poor fit (see Figure 8). While the final model (see Figure 7) supported Ajzen’s TPB with attitudes, subjective norms, and social support all predicting intentions and intentions predicting behavior, the model incorporated prior behavior (drug use) and re-conceptualized some of the variables to reflect the importance of social influences. The modified TPB (see Figure 7) provided a better model for describing adolescent treatment engagement when compared to Ajzen’s original TPB (see Figure 8).

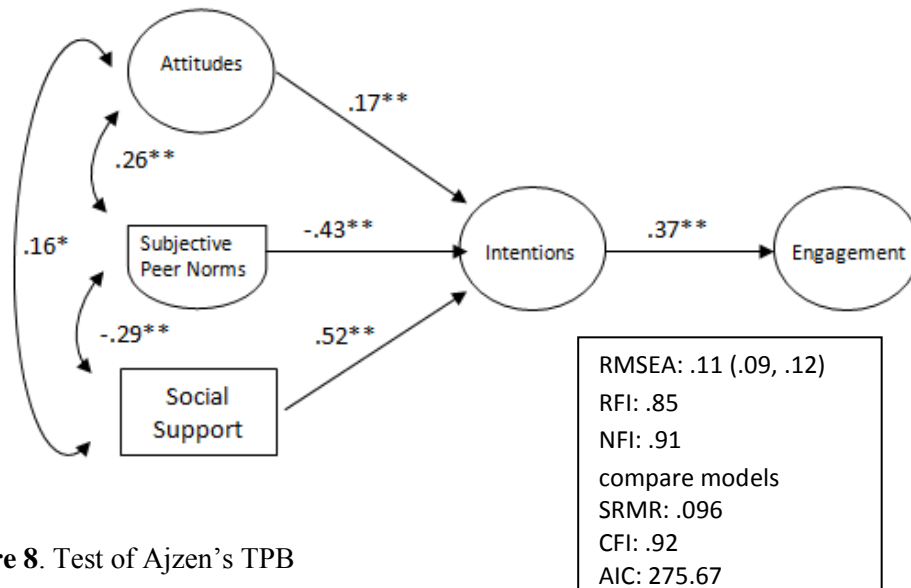


Figure 8. Test of Ajzen’s TPB

Hypothesis five, a test of moderation, predicted that the relationships in the final model would differ between males and females. The male and female models both yielded an adequate fit (see Figure 9 and 10). For females, the relationships of attitudes, subjective peer norms, and social support to prior drug use were stronger than for males.

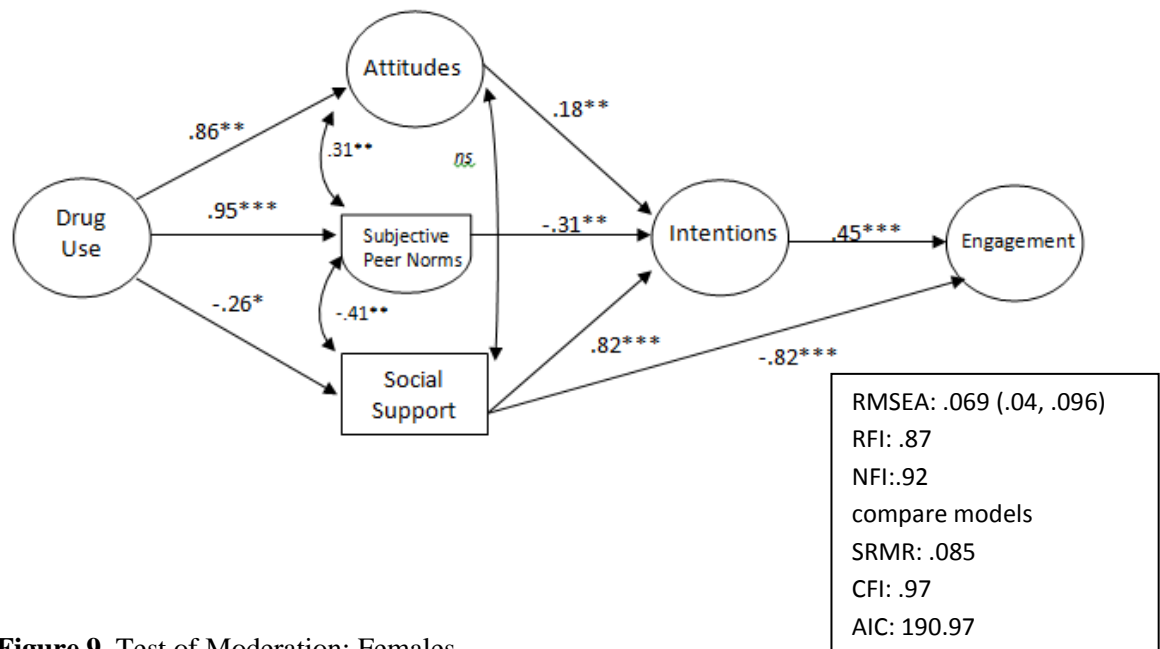


Figure 9. Test of Moderation: Females

The influence of prior drug use on social support was not significant for males (coefficient = .04). Social influences were generally stronger predictors for females than males, specifically the relationships between subjective peer norms and intentions as well as social support and intentions. Strikingly, social support significantly predicted engagement, weakly but positively for males, and strongly and negatively for females. The relationship between intentions and engagement was much stronger for females. The different relationships between males and females, specifically regarding social influences, suggest the treatment process is very different for both genders.

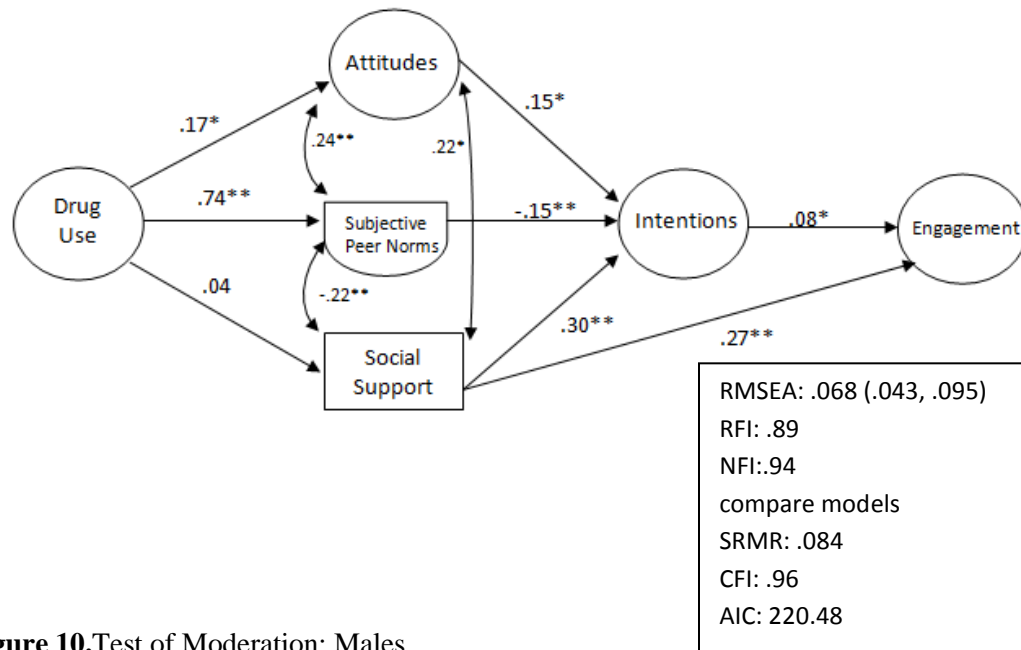


Figure 10.Test of Moderation: Males

Discussion

Given the lack of literature assessing adolescent engagement in treatment and the importance of engaging in the treatment process for successful outcomes, this study explored predictors of engagement. The final model described how judgment and decision-making (prior drug use) influenced social and cognitive expectancies (subjective norms, attitudes, social support) that influenced the treatment process (intentions, engagement) among adolescents in a residential drug treatment setting. Specifically, measures of prior drug use, attitudes towards treatment, perceived peer acceptability of drugs, perceived social support, and intentions to resist drug use measured at intake impacted engagement in treatment, 30-45 days after admission. Support for TPB was found with attitudes towards treatment, subjective peer norms, and perceived social support predicting intentions to resist drug use. Intentions to resist drug use were also positively related to behavior, as measured by engagement. While a complete measure of perceived behavior control was not included, the final model supported Azjen’s TPB with the inclusion of attitudes, subjective peer norms, perceived social support, intentions, and behavior. TPB provided a sound theoretical basis for

understanding the treatment process for adolescents and supported other research demonstrating the applicability of TPB to model drug treatment utilization (Hounsa et al., 1993, Kagee et al., 2008, Kleinman et al, 2002). According to the final model, adolescents who reported higher prior drug use, taken as an indicator of problems with judgment and decision making, also reported higher acceptability of drug use by peers supporting SNT by acting according to perceived norms. Perceived social support strongly and positively predicted intentions to resist drug use. The final model provided support for the importance of social connections among adolescents and added to the abundant literature showing a strong link between drug-using peers and drug use (see Dinges & Oetting, 1993; Hawkins et al., 1992; Henry, 2008; Swadi, 1992). Adolescents with favorable attitudes at intake, measuring a desire, need, and readiness to be in treatment, reflected cognitive expectancies that positively influenced intentions to resist drugs. This positive relationship continued into treatment as these adolescents also reported higher engagement.

The final model included several modifications to Ajzen's original TPB including prior drug use, distinguishing between family and peer subjective norms reflecting PST and SNT, as well as including a measure of perceived social support. The first modification included adding prior drug use in the model which was strongly and positively related to subjective peer norms, a finding supported by other researchers who incorporated this variable into a modified version of TPB (Hoie et al., 2010, Moan & Rise, 2006). The relationship between drug use and intentions was mediated by attitudes and subjective peer norms which partially supported the fourth hypothesis and a finding by Morrison et al. (2010). In their study, however, attitudes and perceived behavioral control mediated the relationship between drug use and intentions while in the current study perceived social support did not mediate this relationship. Additionally, the current study found a link between subjective peer norms and intentions while Morrison et al. (2010) found no evidence of this relationship among a sample of young adult mothers. It is interesting to note that Ajzen pointed out a consistently weak relationship between subjective norms and intentions, a finding supported in a study applying TPB to drug treatment utilization (Kleinman et al., 2002), although not seen in this sample. Rather, the

current study found a negative and significant relationship between subjective peer norms and intentions. Most of the studies examining TPB utilized adult samples suggesting that peer influences were different among adolescents. For adolescents, peers may provide a sense of identity and influence their behavior by placing a high value on conforming to those around them. This relationship was more pronounced for females than males suggesting they may be more relationally oriented supporting Zimmermann and Sieverding (2010) who found the relationship between social pressures and intentions to drink was only significant for females. Among adolescents, perceived peer acceptability of drug use was negatively and significantly related to intentions to resist drug use highlighting the importance of examining perceived subjective peer norms within a drug treatment context.

The final model also supported both Primary Socialization Theory (PST) and Social Norms Theory (SNT) drawing on the influential role of social connections. PST suggested that one internalizes behavior by observing those around him or her. Higher drug use as reported at admission positively related to perceived peer acceptability of drug use and attitudes towards treatment, supporting PST which stated that deviancy arises from bonding with deviant peers. Attitudes go hand in hand with socialization and the final model supported this relationship as positive attitudes and deviant peers both influenced the treatment process. Because the relationship between drug use and attitudes was much stronger for females than for males, attitudes appear to be highly influenced by prior judgment and decision making for females. The role of prior deviant behavior may figure more prominently during the treatment process for females compared to males.

Based upon PST, the hypothesized model included two measures of subjective norms: family and peers. The measure of subjective family norms, a measure of family dysfunction, was not significantly related to intentions to resist drugs contrary to Lopez et al. (2001) who found a significant positive relationship between family conflict and likelihood of using drugs but did not test a TPB model. The lack of a statistically significant relationship does not diminish the role of family but may point to a problematic conceptualization of the variable. The latent variable “subjective

family norms” should reflect a measure of perceived family pressure to perform or not perform the behavior. The two measures comprising this variable: family warmth and family control were measures of family dysfunction and not a measure of family drug use or perceived family acceptability of drug use as its counterpart “subjective peer norms” captured among peer networks. This suggested that family dysfunction was not a good measure of subjective norms and therefore did not fit within this model of adolescent engagement in treatment. Examining family drug use and family acceptability of drug use may better capture Ajzen’s original conception of subjective norms.

PST suggested that the relationship between negative peer and family influences could positively impact the treatment process (see Broome et al., 2001, Dakof et al., 2001, Connell et al., 2007). Perhaps adolescents are attuned to the negative consequences of their own drug use and the drug use of those around them recognizing problems but the relationship between subjective peer norms and intentions was negative when tested in the model. Contrary to this literature, the final model revealed a negative relationship between subjective peer norms and intentions to resist, suggesting that social influences, or beliefs about normalcy and peer acceptability of drug use, were negatively influential to the treatment process. This relationship suggested that adolescents learn from those around them and drug use was a behavior that was reinforced by those who value it.

According to SNT, people are said to act in response to a perceived norm. The negative relationship between subjective peer norms, as measured by perceived peer deviancy and normalcy of drug use, and intentions to resist drug use provided support for SNT. As adolescents report higher perceived normalcy of drug use and higher drug use and deviancy among peers, intentions to resist drug use were lower. Adolescents who perceived drug use as the norm reported lower intentions to stop drug use. Normalcy of drug use suggested a possible thinking error that had negative implications for the treatment process.

The influential role of social connections, both peers and family, was supported by the inclusion of the measured variable *social support* as a partial measure of perceived behavioral control. *Social support* comprised a measure of perceived help, support, respect, trust, and understanding from

family and friends with regards to one's efforts in treatment and resisting drugs. The current model illustrated how both one's own perceived intentions of resisting drugs combined with social support for resisting drugs positively influenced one's engagement in the treatment process. This strong positive relationship between social support and intentions highlighted the importance of positive social influences among adolescents, especially among females. The strong negative relationship between perceived social support at intake and engagement in treatment at time two for females suggests that social influences are perceived very differently between genders. Among females, when external support was low, engagement was high. While social support may arise from treatment sources that are not measured including counselors and other clients, this relationship suggested that females and males understand social support very differently. Identification with social groups and membership within social groups function differently for males and females. Females may feel that their drug use problems can be addressed among family and friends and receiving external help could be viewed as intrusive and unwelcome. Indeed, the literature concerning social support for females has shown that it functions differently from males (Dodge & Potocky-Tripodi, 2001) and depending on the quality of these relationships, they can positively or negatively impact the treatment process (Lewandowski & Hill, 2009). These relationships could contain elements of distrust and control highlighting the importance of assessing the quality of social support. For males, perceiving support from friends and family could mean that it is acceptable to receive help from outside sources and thus engagement in treatment is higher. Females who perceived lower social support may seek treatment as a source of support. These findings could also indicate that the treatment process was isolated from family and friends who may not be involved directly with the process. Assessing the types of social support and quality of relationships deserves further investigation to further parse out this striking relationship.

The final model also contained some interesting findings with regard to motivation and engagement. Research has demonstrated a strong link between what has historically been conceptualized as motivation (problem recognition, desire for help, and treatment readiness) and

engagement (treatment readiness, counselor rapport, and treatment satisfaction; see Joe et al., 1999). The current model did not find support for this direct link between attitudes and engagement at time two. Re-conceptualizing motivation as an attitude, this latent variable reflected an adolescent's desire to be in treatment, recognition of problems with family, oneself, and the law, and readiness for treatment indicating a positive attitude to be in treatment. Attitudes were positively related to intentions to resist drug use and indirectly impacted engagement in treatment at time two. Most of the literature has used adult populations and this historically strong link may not be adequate to describe adolescents in drug treatment. Indeed, engaging in risky behaviors, being involved with deviant peers and perceiving drug use as normal, and reporting unfavorable attitudes towards treatment negatively impacted intentions to resist drug use. These negative social and cognitive expectancies indirectly and negatively impacted engaging in treatment and represent potential barriers to treatment with implications for retention.

After conducting factor analysis on the scale *problem recognition*, the first factor comprised recognition of problems caused by drug use with regard to oneself, one's family, and with the law; the second factor comprised problems with health, death, and friends, and the third factor comprised problems with school. The second and third factors had generally lower means among the adolescents indicating that recognition of problems may first be apparent in proximal sources where consequences are immediate such as problems with oneself, family, and the law. More distant and abstract concepts, such as health and death, were generally not recognized as problematic with regard to using drugs. Recognizing problems related to friends was likewise low which could indicate hanging out with peers who use drugs. The distant sources, health, death, friends, and school, may not have direct or immediate consequences to using drugs and therefore recognition of problems in these areas was lower.

The final model does not include other variables that may influence readiness for treatment, specifically addressing pressures for treatment. Drawing on a qualitative analysis examining what keeps adolescents in treatment (Landrum et al., 2011), adolescents are often pressured to be in

treatment either by juvenile justice or family sources. In this sample, adolescents tended to recognize problems with both the law and family indicating a need to assess pressures for treatment.

Additionally, attitudes towards treatment were unfavorable which could be influenced by a fear of the unknown (i.e., treatment), not wanting to be in treatment, wanting to be home with friends and family, among other factors that were not measured and not included in the model.

Limitations and Future Research

This study set out to examine a model of adolescent engagement using TPB, however the model does not include a complete measure of perceived behavioral control. The model described how adolescents who think their drug use is normal and report lower intentions to stop using drugs have lower participation and counselor rapport 30-45 days into the treatment process. Judgment and decision making (prior drug use) characterized social and cognitive expectancies, or the beliefs regarding the outcome of the behavior. Higher perceived drug use by peers, thinking errors related to perceived normalcy of drug use, and unfavorable attitudes towards treatment negatively impacted intentions to resist drugs. These false beliefs and expectations with regard to drug use continue to influence behavioral measures deep into treatment. While full assessment of the application of TPB to a model of engagement cannot be assessed without a complete measure of perceived behavioral control, the final model provided partial support for TPB by finding that attitudes, subjective peer norms, and social support influenced intentions and intentions predicted behavior.

Another limitation of the current study is the ability to relate these relationships between motivation and engagement to other studies that have used the historical and typical conception of these measures. The variable problem recognition which has typically been included as a measure of motivation only included recognition of problems with family, oneself, and the law and was reconceptualized as an attitude. The link between motivation at time one and engagement at time two deserves further examination given the possibility that problem recognition may be particularly problematic among adolescents, especially among those who perceived their drug use as normal. Indeed, preliminary analysis conducted on these individual measures of motivation suggest that

problem recognition relates differently to measures of thinking, psychosocial functioning, and treatment variables compared to treatment readiness (Knight et al., 2012). Careful consideration and examination of these variables should occur when examining measures related to motivation and engagement among adolescents within a residential drug treatment setting. Most of the past research on these issues has used adult samples and future studies examining the differences between adolescents and adults could further elaborate on how the treatment process might be very different.

Likewise, treatment satisfaction has typically been included in measures of engagement and because it was removed from the model based on confirmatory factor analysis results, the model suggested that adolescents in a residential drug treatment setting may differ from adult populations and those in outpatient settings. The adolescents in this sample were not able to go home at night, socialize with friends, and spend time with their family and thus measures of treatment satisfaction may not be an acceptable indicator of satisfaction with treatment but rather reflect these other issues. Future research should examine the possible re-conceptualization of this scale.

Further research should examine the gender differences seen in the current study. Measures of internal treatment support and perceived acceptability of being in drug treatment could be used to further illuminate the relationship between social support and engagement. Due to the strong relationship between social support and intentions to resist drug use, involving family and friends in the treatment process may promote successful outcomes.

Because intentions, attitudes, subjective norms, and drug use were measured at time one, cause and effect cannot be inferred. The possible reciprocal relationships between these variables were tested. While none of these models yielded acceptable fits in the model, there are many factors that were not included in the model including family norms, pressures for treatment, and problem recognition that future research should examine.

Future research that examines pressures for treatment from criminal justice, school, and family may shed light on an adolescent's desire for help, problem recognition, and readiness for treatment. If one feels pressure to be in treatment and also feels their drug use is non-problematic and

normal, these potential thinking errors may have negative influences on intentions and engagement in treatment. Examining these pressures would more fully flesh out the beginning stages of the treatment process. The results from this study and those in the literature suggested that the treatment process for adolescents may be very different from adults considering the influential role of peers, pressures from external sources, and thinking errors that impact judgment and decision making.

Drug use and subjective peer norms were negatively related to intentions to resist drug use suggesting that deviant peer groups can have a negative influence on the treatment process. Expanding this model to include measures taken later in treatment (past the 45 day mark) of relapse, and retention would further illuminate the role of subjective peer norms and drug use. These measures recorded at intake could potentially continue to influence the adolescent's attitudes, engagement, and successful outcomes after discharge.

Other limitations involve generalizability due to the exclusion of clients who dropped out before the second assessment (30-45 days after intake). Dropout rates are often the highest in the first 30 days (Galanter & Kleber, 1999) and those who leave are likely different from the general treatment population or those who stay. These clients could potentially have severe problems not only with drug use but cognitive, psychological, and social functioning. Among those who drop out early, either through self-selection or a shift in attitudes towards treatment, engagement ratings would likely be lower and problem severity higher compared to those who stay (see Bradley & Gossop, 1982). Furthermore, the data only included those who completed all the measures on the assessments in order to eliminate missing data. These clients may represent a biased selection of all clients in treatment and would not include adolescents who chose to skip questions for various reasons.

Implications

Despite these limitations, the current study added to the growing body of literature examining adolescents in substance abuse treatment. Specifically, the current study illuminated the link between attitudes and engagement among adolescents in treatment. Drug use was related to a deviant peer network and perceived social acceptability of drug use. This was particularly problematic as it

negatively influenced intentions to resist drugs. However, a strong positive relationship between social support and intentions reinforces the importance of prosocial influences. Focusing early treatment efforts on the potentially negative influence of deviant peers and combating the thinking errors that drug use is normal and non-problematic may be beneficial to treatment outcomes, specifically treatment engagement. Promoting and involving family and friends who support recovery efforts in the treatment process may be particularly beneficial for female clients.

Interventions that focus on examining the negative peer influences and addressing the potential thinking error that drug use is normal may increase favorable attitudes towards treatment and engagement in treatment. With a negative relationship between subjective peer norms and intentions to resist drugs, early intervention efforts should address this barrier by examining these negative influences, discussing the influence of peers, and working on creating positive social influences that are beneficial to the treatment process.

With thinking errors as a potential barrier to engagement and retention, adolescents may not desire help or be ready for treatment. They could be in denial, feel forced to be in treatment, be upset and angry at the situation, and generally withdraw and not participate in treatment. Further examination of these factors and their implications on the treatment process is needed to help discern the best course of action and develop an effective and impactful treatment plan.

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Appendix

Individual Items Comprising Measures

ATTITUDES

A. Problem Recognition (PRY)

with law, family, oneself

5. Your drug use is a problem for you.
8. Your drug use is more trouble than it's worth.
10. Your drug use is causing problems with the law.
16. Your drug use is causing problems with your family.
28. Your drug use is making your life become worse and worse.

with health, death, friends

24. Your drug use is causing problems with your health.
33. Your drug use is going to cause your death if you do not quit soon.
36. Your drug use is causing problems with your friends.

with school

11. Your drug use is causing problems in thinking or doing your school work.
20. Your drug use is causing problems with school attendance.

B. Desire For Help (DHY)

1. You need help dealing with your drug use.
12. It is urgent that you find help immediately for your drug use.
13. You will give up your friends and hangouts to solve your drug problems.
22. Your life has gone out of control.
26. You are tired of the problems caused by drugs.
30. You want to get your life straightened out.

C. Treatment Readiness (TRY)

2. You need to be in treatment now.
4. This treatment gives you a chance to solve your drug problems.
6. This kind of treatment program is not helpful to you. ®
18. This treatment program gives you hope for recovery.
21. You want to be in drug treatment.
25. You are ready to leave this treatment program. ®
27. You are at this treatment program only because it is required. ®
35. You are not ready for this kind of treatment program. ®

SUBJECTIVE NORMS

Family Dysfunction

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 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.

Peer Deviancy

A. 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.

B. 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.

C. Drug Use Expectancies

3. Alcohol helps me feel a part of things.
6. Drugs help make a party better.
13. Drugs help me feel a part of things.
15. It is normal to use alcohol when you are a teenager.
16. Alcohol helps make a party better.
18. It is normal to use drugs when you are a teenager.
30. I feel pressure from my friends to use alcohol/drugs.

PERCEIVED SOCIAL SUPPORT

A. Social Support (SSY)

1. You have people close to you who motivate and encourage your recovery.
5. You have close family members who want to help you stay away from drugs.
6. You have good friends who do not use drugs.
9. You have people close to you who can always be trusted.
17. You have people close to you who understand your situation and problems.
20. You are often in situations where drug use is common. ®
21. You have people close to you who expect you to make positive

changes in your life.

25. You have people close to you who help you develop confidence in yourself.

31. You have people close to you who respect you and your efforts.

DRUG USE

A. Drug Use Severity

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

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?

B. Drug Use Frequency

<u>How often did you use each type of drug during the last 12 months?</u>	Never	Only a few times	1-3 times per month	1-5 times per week	About every day
11a. Alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11b. Marijuana/Hashish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11c. Hallucinogens/LSD/ PCP/Psychedelics/ Mushrooms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11d. Inhalants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11e. Crack/Freebase	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11f. Heroin and Cocaine (mixed together as Speedball)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11g. Cocaine (by itself)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11h. Heroin (by itself)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11i. Street Methadone (non-prescription)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11j. Other Opiates/Opium/Morphine/ Demerol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11k. Methamphetamines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11l. Amphetamines (other uppers)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11m. Tranquilizers/Barbiturates/Sedatives (downers)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11n. <u>Other</u> (specify) _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

INTENTIONS

A. Expectancy (EXY)

- 11. You are likely to feel the need to use drugs in the next few months. ®
- 17. You are likely to drink alcohol in the next few months. ®
- 24. You are likely to relapse in the next few months. ®
- 31. You are likely to have problems in quitting drug use. ®

B. Self-Efficacy: Resist Drug Use

I am confident that I can --

- 14. find ways of reducing stress, that don't involve alcohol/drugs.
- 18. make friends with people who don't use alcohol/drugs.
- 22. resist the temptation to use alcohol/drugs when others around me are using.
- 28. find things to do that I enjoy but that don't involve alcohol/drugs.
- 31. avoid situations and people where alcohol/drugs are present.

TREATMENT ENGAGEMENT PROCESS DOMAINS

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.

VITA

Brittany Kristin Landrum was born January 30, 1987 in Grand Prairie, Texas. She is the daughter of Bruce and Valerie Landrum. She graduated from Nolan Catholic High School in 2005, completed her Bachelor of Arts degree in Psychology from the University of Dallas in 2008, and completed her Master of Science degree in Experimental Psychology from Texas Christian University.

In August 2008, she enrolled in the graduate program in Psychology at Texas Christian University. She began working as a graduate assistant at the Institute of Behavioral Research and as a teacher's assistant for the Psychology department.

Brittany attends several conferences every year presenting her work on technology and on line social networking and their impact on human experience. She is a member of the American Psychological Association.

ABSTRACT

EXAMINING ADOLESCENT ENGAGEMENT USING A MODIFIED THEORY OF PLANNED BEHAVIOR

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This paper tests a model of adolescent treatment engagement within a residential drug treatment setting. Using a modified Theory of Planned Behavior (Ajzen, 1991), the model incorporates prior drug use, attitudes, subjective norms, and perceived social support as predictors of intentions to resist drug use and treatment engagement. The current study addresses a gap in the literature assessing the adolescent treatment process by drawing on the literature assessing adult populations and emphasizing the importance of social influences for adolescents. The sample included 407 adolescent clients from 7 residential drug treatment centers across the U.S. who completed surveys regarding an evaluation of themselves and treatment at intake and again 30-45 days later. Structural Equation Modeling was conducted to test the proposed model. Moderation analyses by gender revealed that social influences affect the treatment process differently for males and females. Implications for treatment interventions and directions for future research are discussed in terms of the final model and the role of social influences for gender.