AN EXAMINATION OF THE THEORY OF PLANNED BEHAVIOR AND THE PREDICTION OF INTENTIONS AND RECIDIVISM OUTCOMES AMONG JUVENILE JUSTICE YOUTH

by

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-This Thesis is dedicated to my mother, Cristina Valdés-

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An Examination of the Theory of Planned Behavior and the Prediction of Intentions and Recidivism Outcomes among Juvenile Justice Youth

Across the United States, juvenile crimes impose a detrimental cost to society and contribute to a significant proportion of all national offenses (Sickmund, Sladky, Kang, & Puzzanchera, 2015; Piquero, Jennings, & Farrington, 2013). Aggregate costs of juvenile corrections expenditures has been as high as $6 billion annually (Aizer & Doyle, 2015). Despite the high costs of this at-risk population, criminal justice research continues to focus on factors that can predict re-offending such as uptake in substance use (SU) and mental health services (Spoth et al., 2007). Research posits that this offender population can be identified early through the use of risk assessment tools (Patterson-Badali, Skilling, & Haqanee, 2015). Subsequently, when identified and provided with adequate supervision, future recidivism events can be deterred (Cohen & Piquero, 2009). However, research regarding the cognitive processes of juveniles that increase the likelihood of their intention to recidivate is often less studied.

Adolescents involved in the criminal justice system are a vulnerable population usually between the ages of 12 and 17. Historically, investigations into predictors of juvenile recidivism have focused on a pattern of criminal history, behavioral (i.e., prior drug use), parental (i.e., single parent household), and school-related variables (i.e., poor grades, class attendance). Most often, re-offending adolescents are usually younger (i.e., around age 14) at their first arrest (Cottle, Lee, & Heilburn, 2001). Compared to late onset of first offense, early offenders have a longer delinquent career (Myers et al., 2000).

Youth delinquent behavior has prompted research on examining risk factors associated with committing crimes in various settings, populations, and ages (Bonta & Andrews, 2003; Carr & Vandiver, 2001; Spice et al., 2013). In juvenile justice (JJ) settings, validated risk assessments with a focus on dynamic risk predictors are currently used (Andrews & Bonta, 2010). Risk assessment instruments are key tools that enable an estimation of the likelihood to recidivate (Development Services Group Inc., 2015). Historically, risk assessments have developed from unstructured and judgment-based assessments (Andrews, Bonta, & Wormith, 2006; first generation), to highly statistical and predictive assessments (Andrews & Bonta, 2010; fourth generation). Most modern assessments rely on a classification system of risk levels ranging from low-risk to high-risk, including both static (e.g., historical) and dynamic (e.g., amenable) factors, and are able to inform case management. However, recent concerns have been raised about the use of static factors in risk assessments as they may be a product of "demographical societal constructed identifiers" (i.e., race, gender, socioeconomic status) that may put certain youth at a higher likelihood for coming in contact with the law (Thomson & McGrath, 2012). At any rate, since 1990, the use of these tools has increased from 33% to 86% in the JJ arena (Perrault, Paiva-Salisbury, & Vincent, 2012). The Council of State Governments recommended that risk assessments should be routinely used by justice agencies across the nation (Seigle, Walsh, & Weber, 2014).

In the last 15 years, delinquency research has gained attention in the standard of matching treatment intensity with risk levels (i.e., "risk principle;" Andrews, 1986; Andrews & Dowden, 2006). Intensity of services refers to the frequency, duration, and level of supervision that are allocated to the offender. The risk principle specifies that the intensity of services provided should match the risk level of the youth. Namely, low-risk youth should receive lower intensity services and high-level risk youth should receive higher intensity services. This was a significant advancement in the criminal justice system because early justice programming relied on punishment and restitution of youth regardless of risk level. Appropriate placement is imperative because if high-risk juvenile-involved youth are matched with a lower level of treatment intensity and supervision, their outcomes are less effective than if matched with a higher level of treatment intensity and supervision (Lowenkamp, Latessa, & Holsinger, 2006). With the growing expansion and interest in current emphasis of probation as opposed to retribution in the JJ system, theory is equally in need of advancement. To better understand factors involved in the prediction of youth crime, deductive theory is an often-conventional approach. With a deductive theory approach, the starting point of understanding a target behavior is to start broad and then progress towards specific mechanisms of the behavior.

With this in mind, a theoretical framework useful for predicting behavior (i.e., recidivism) is the TPB (Ajzen, 1991; Armitage & Conner, 2001). The TPB describes how attitudes, subjective norms, and perceived behavioral control (PBC) all correlate with one another; and, how such factors uniquely predict an intention to perform positive or deviant behavior. In regard to different health and social behaviors, the TPB has been used in the prediction of violent behavior (Tolman, Edleson, & Fendrich, 1996), recidivism (Kiriakidis, 2008; Kiriakidis, 2010), alcohol misuse (Marcoux & Shope, 1997), and medication adherence (Manning & Bettencourt, 2010). The TPB in a JJ context would specify that exogenous (or preceding) variables can have an indirect effect on behavior through an intention to recidivate as well as a direct effect on behavior (recidivism outcome). Given the paucity of research that has examined the TPB with respect to youth recidivism outcomes, this thesis will test the applicability of this framework with the use of mediation as an analytic approach. Additionally, this thesis will investigate the role of background risk factors (substance use [SU], age at first offense, and number of offenses) and their potential relation to intention and behavior as mediated by the cognitive processes of the TPB. The primary window of the recidivism outcome variable in the study will be 12 months, which is consistent with typical research on recidivism (Mitchel, Wilson, Eggers, & MacKenzie, 2012).

Literature Review

The development of adolescent behavior and the propensity for them to react to adversity through delinquency is a public concern. Criminal prosecutors in the 1980s and 1990s reacted to an increase in juvenile violent offenses by prosecuting them as adults. Through these efforts, the removal of juveniles from the community while being incarcerated in locked facilities with limited rehabilitation was ultimately not a fruitful strategy (Jensen & Metsger, 1994). Youth would return to their adverse and maladaptive communities, and incarcerated punishment did not target the multidimensional influences (i.e., family functioning, peer relationships) had been found to affect youth delinquent behavior (Carney & Buttell, 2003). This is often referred to as the retributive model of delinquency (Bazemore & Umbreit, 1995), or colloquially known as the "Get-Tough Approach" (McLatchey, 1998). Starting in the early 2000s, multisystem and community-based programming became more standardized, diverting youth from being incarcerated, and juvenile supervision systems were restructured to include individualized treatment programming targeting mental health and SU problems (Carney & Buttel, 2003). An often-stated factor for an explanation of human behavior in the social sciences and criminal justice research is positivism. Positivism theory claims that humans act in such a way because of reason and logic interpreted through our sensory experiences (Bartollas & Miller, 2010). Thus, juvenile crime is theoretically-bounded on this approach. Namely, juvenile crime is not random or haphazard, it is a casual chain of events that occur the person's ecology and eventually take place. In all, retribution and a punishment-style of sentencing does not tackle the root cause of juvenile delinquency. The new shift towards rehabilitation, clinical treatment, and adequate juvenile placement is ultimately how juveniles successfully integrate back into productive members of society.

Out of all of the methodologies and systematic approaches for studying and predicting offenses, risk tools are probably one of the most vital instruments in a JJ setting. Specifically, research consistently shows that the use of validated predictive risk tools can more effectively aid the justice system as they strive to deter future delinquency (Funk, 1999; Hodge, 2002; Schwalbe, 2008; Yang, Wong, & Coid, 2010). However, despite the scientific consensus in advocating for predictive risk tools over the years, not every state has adopted the implementation of routine risk assessments at intake (Wachter, 2015). Even in states where the administration of a risk assessment at intake is mandatory, local JJ jurisdictions have the ability to choose from various other instruments, which may or may not be research-validated (Wachter, 2015). A research-validated instrument refers to an instrument that has been developed, constructed, and one that uses statistical diagnostic criteria for its intended target group (Creswell, 2005). In the State of Texas, use of research-validated risk assessments are mandated. Tarrant County Juvenile Services (used in the current thesis; TCJS) chose to use the Positive Achievement Change Tool (PACT).

With respect to predicting recidivism, it has been documented that there is a benefit of using risk assessment tools over JPO judgment, which is equal to chance (50%) in predicting an individual's risk to recidivate (Wachter, 2015). Risk assessments have vastly improved since their first development and usage. First generation risk assessment tools relied only on non-theoretical conclusions. Second generation tools added the implementation of static risk factors (e.g., ethnicity, gender, age). Third generation risk assessment tools then added dynamic risk variables (e.g., social status, occupation, drug use). Finally, the most recent iteration of risk assessments in JJ are fourth generation risk assessments (used in the current thesis). Fourth generation risk assessment tools provide the benefits of second and third generation risk assessments, but they are also able to inform treatment and programming decisions by automatically generating case plans. By using a structured risk assessment tool, methodical administrative approaches can optimize resource allocation and objectively justify referral to services and divert resources towards helping youth who are identified as in-need. In 2013, the Council of State Governments made a recommendation to improve and advocate for the use of individualized programming (Seigle, Walsh, & Weber, 2014). Through the use of risk assessment tools, research posits that case management programming should be prioritized for the highest offenders (Baglivio, Greenwald, & Russell, 2014).

In light of the advancement and sophistication of risk assessment tools in the JJ arena and their case management technologies, criticism of risk assessments has mostly revolved around risk-level placement with regards to false negatives and false positives (Marczyk, Heilbrun, Lander, & DeMatteo, 2003). False negative predictions (Type II) of a risk level occurs when an individual who is actually at a high likelihood for re-offending is incorrectly labeled by a risk assessment to be at low-risk. This type of error is detrimental because appropriate rehabilitation and services are not provided to the individual. Unfortunately, an even more vexing example of a Type II error in the justice system is the error of letting a guilty defendant walk free. The second type of error, is when an occurrence is false positive. False positive errors (Type I) occur when a low-risk individual is labeled as a high-risk, which are more prevalent in the literature (Auerhahn, 2006). In a justice court setting, for example, a Type I error could occur when a judge or jury finds that an innocent person is guilty. False positive predictions in relation to recidivism are also concerning because unnecessary resources may be allocated to the youth such as providing a more intensive supervision type. Related, it is important to note that not all risk assessments are administered the same way. In some cases, risk assessment tools are self-reported, while others are not administered to the youth all in a single session, but rather filled out by corroborating JPO knowledge and rapport (i.e. full-PACT). Notably, self-report research in JJ settings have revealed that youth crime is always greater than what is actually reported (Bartollas & Miller, 2010, p. 73). In the same book chapter, it is argued that a disparity of self-reported and actual behavior is not just limited to crime, but also in drug use, and alcohol use.

Risk Factors and Cognition

Risk factors are influences and conditions that increase the likelihood of negative behavior. Early research has revealed that increased risks can place a youth on a trajectory of delinquent behavior and SU (Carr & Vandiver, 2001). The risk factor prevention paradigm is a useful tool for examining risk factors and juvenile crime outcomes (Haines & Case, 2008). This paradigm is routinely advocated for by not only practitioners and researchers, but also policy advocates and the general public alike. The premise of the risk factor paradigm is based on empirical data, rather than on theory. However, criticism suggests that (a) this is out-of-date, (b) measurement on the factors is not unanimous by all studies, and at times ambiguous, and (c) the paradigm is not sensitive to different cultures and races (Armstrong, 2004; Pawson & Tilley, 1998; Pitts, 2003).

Most often, criminal history and age at first offense/commitment have historically been the two most significant predictors of recidivism (Barret, Katsiyannis, & Zhang, 2006; Cottle, Lee, & Heibrun, 2001; Schwalbe, Fraser, Day, & Cooley, 2006; Wood, Allenyne, Mozova, & James, 2014). Family and parenting factors that predict delinquency are often less studied. Such factors include: negative parent/child cohesion (Blaske, Borduin, Henggeler, & Mann, 1989), and poor parenting styles (Lerner & Galambos, 1998). Aside from familial factors, negative friends and peers can also affect youth. Such factors include associating with risky friends (Carter, McGee, Taylor, & Williams, 2007) and negative peer affiliation (Shapiro, Smith, Malone & Collaro, 2010).

Aside from social predictors of recidivism, research has shown that in general, recidivists exhibit patterns of distorted cognition in their everyday lives (i.e., overgeneralizations, magnification; Lipsey, Chapman, & Landenberger, 2001). These patterns of deficient levels in cognition can affect individuals in a way that they are not able to make rational decisions, have sufficient skills for long-term planning, or react violently to non-threatening situations. One model of cognition and delinquency is the work of Ross and Fabiano (1985). Their research posits that impairments in self-control, social perspective taking, abstract reasoning, and external locus of control - all in conjunction - hinder criminals' ability to function productively in society. As the role of cognition plays an important function in recidivistic youth offenders, cognitive-behavioral therapies have been developed to amend their thinking patterns (Henning & Fruech, 1996). Through longitudinal studies, cognitive shifts of delinquent adolescents through the use of cognitive behavioral therapies can be effective enough to restructure their distorted cognitions.

As previously mentioned, the role of cognition and re-offending is an important area to study because re-offenders may lack cognitive tools for favorable decision making. The limited number of studies examining cognitive factors in the prediction of recidivism outcomes is one reason to conduct the current study. In the context of JJ, examining the role of cognition and the prediction of an intention to recidivate as well as recidivism outcomes would be an important advancement and contribute a novel model to the literature.

Theoretical Framework

To aid in studying the aforementioned relation, a literature review was conducted to find a theoretical framework that would account for cognitive factors and their relation to behavioral outcomes. Another consideration in the search for a theoretical framework was the inclusion of the independence of intentions to act on a particular behavior and actual manifested behavior. Namely, a model would take into consideration that an intention to act and an actual behavior can both be measured independently. As a result, it was found that, the initial work of Ajzen (1988) focused on the role of cognition. In his work, cognitive control and self-regulation are often cited as important predictors of behavior. It was also explained that early research emphasized utility of cognitive control and self-regulation using the aggregation principle (Epstein, 1983). This principle assumes that an aggregate of specific observed behaviors can be used to derive a valid measure of general attitudes. However, it was found that the principle of aggregation cannot explain variability across developmental situations.

Ajzen’s (1980) first theoretical model to explain the relationship of intention and behavior was the theory of reasoned action (TRA). He proposed that attitudes and subjective norms precede an intention to perform a behavior and in turn can predict a manifested behavior. Attitudes refer to individual beliefs and their stance on a particular behavior. Subjective norms encompass the ideas of how culture, situational norms, and personal norms influence the individual to engage in the behavior in question. In its beginnings, the theory received praise, had practical appeal (Madden, Ellen, & Ajzen, 1992), along with being applied in several contexts, such as organizational and health-related behaviors (Sheppard, Hartwick, & Warshaw, 1988). One criticism of the theory of reasoned action, however, was that it was based on the assumption of volitional behavior. Volitional control of behavior is a cognitive mechanism wherein an individual consciously and willingly commits to a certain action. As a consequence, there was disapproval among researchers for its volitional assumption and a subsequent revision of the framework followed suit. By incorporating PBC as an additional exogenous factor, an individual's self-report on their capacity to regulate their actions, the theory of reasoned action overcame the volitional assumption. The revised theory explained how the individual perceives the ease of performing the behavior, which can be influenced by internal and external factors is now formally referred to as the TPB (see Figure 1; Ajzen, 1991). In the TPB, subjective norms, attitudes, and PBC can guide intentions or engagement in positive or deviant behavior.

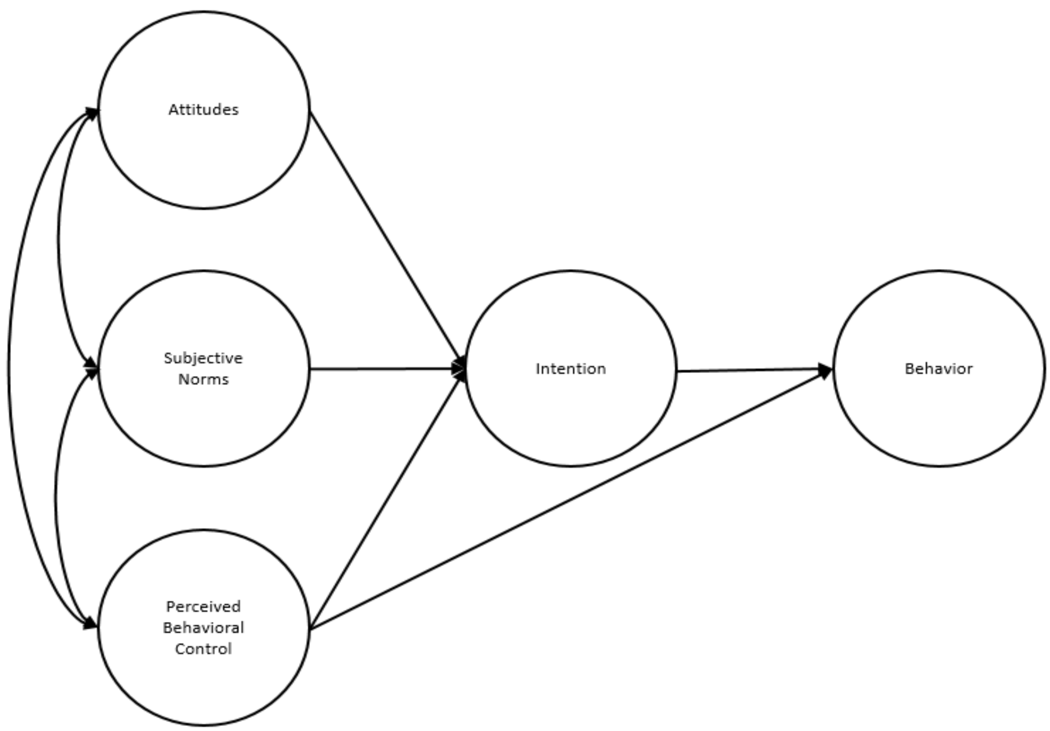

Figure 1. Theory of Planned Behavior. Adapted from "The Theory of Planned Behavior," by I. Ajzen, 1991, *Organizational Behavior and Human Decision Processes*, 50(2), p. 182. Copyright 1991 by American Press, Inc.

The attitudes construct describes the degree to which an individual's opinion about a specific behavior is favorable or unfavorable. The social factor of subjective norms is the second construct used in the TPB and refers to the expected societal pressure or expectations in the individual's reference environment/context to act on a particular behavior. In certain social contexts, a person feels like there is a moral obligation about a particular behavior. This obligation is influenced by subjective norms in one's culture. The construct of PBC can be thought of as the ease or difficulty of a particular behavior. In other words, PBC is the generalized expectancy of behavior, which can vary across environmental situations. The reason it can vary across environmental situations is because the context can prime an individual to act a certain way. Thus, all constructs, not just PBC, must be in the context of the intention of interest (Ajzen, 1991). Ajzen conceptualized the construct of PBC with similarities to Bandura's (1982) concept of self-efficacy. In Bandura's terms, perceived confidence or the likelihood of successfully completing an outcome is determined by cognitive, motivational, and perceived decision-making capabilities. Ajzen thus theorized that one's behavioral control should be directly related to the behavioral outcome. Finally, intentions capture the likelihood that an individual is planning to perform a certain action. The intention to perform a particular action is under the assumption that one is able to capture the motivation behind the specified behavior. This motivation may or may not be enough to influence the individual's readiness to perform the behavior.

There are several reasons for using the TPB as a prospective theoretical framework for studying recidivism outcomes. First, and most importantly, the TPB is primarily concerned with an intention to act on a particular behavior. Research shows how intention and behavior are closely related (Armitage & Conner, 2001) and demonstrate good predictive power (Godin & Kok, 1996). Second, relationships between youth risk background factors (e.g., SU, age at first offense, and number of arrests) and recidivism may be mediated by cognitive behavior processes outlined in the TPB because deficits in thinking patterns can affect a youth's intention and outcomes. Lastly, the reason the TPB is a worthy framework to consider in the context of JJ is that the intention component can aid to explain the differences in criminal justice youth offender classifications such as situational offenders, chronic offenders, and naive offenders. For example, a naïve offender is a youth who could be suffering from mental illness or is simply unaware of the law they are breaking. To put this into a TPB perspective, this type of offender could be hypothesized to have a low intention score. On the contrary, situational offenders could have either low or high intentions. Because situational offenders typically drift in and out of criminality, they mostly are dependent on peer affiliation and social norms. A situational recidivist may in this case could have low intentions but low on the social dimension.

To illustrate, one study used the TPB in its partial application to predict intentions to re-offend from a sample of N = 152 youth offenders (Kiriakidis, 2008). In this study, the author asked youth aged 16 to 21 years of age living in Scotland to respond to an experimenter-derived questionnaire. These questions pertained to the constructs from the TPB (i.e. attitudes, subjective norms, PBC, & intentions). While this study found that all study variables were significantly correlated to intentions, PBC was the strongest contributor to intention and the least significant predictor was subjective norms. The significance of this study was that it was able to bring forth the idea that decisions derived by cognitive beliefs can be thought of in terms of intentions. However, this study did not have corroborating evidence of actual behavior (recidivism) nor background factors in their model. To this end, the pathways from background factors to intentions and also the pathways from the constructs outlined by the TPB to recidivism outcomes can add to a more precise application of this theory.

Background Factors

Background factors in relationship to the three TPB constructs as their antecedents can also be potentially important to study in the prediction of intentions and behaviors (see Figure 2). Background factors are often not accounted for in studies that have used the TPB (Ajzen, 2011), even though literature has established their relevance for target behavior such as recidivism. In predicting behavioral outcomes, risk factors should be considered and carefully accounted for in TPB research as exogenous variables (Ajzen, 2015). To illustrate the use of background factors as exogenous or antecedent variables in the applicability of the TPB, Manning and Bettencourt (2011) used depression as a background variable. The researchers were interested in studying whether the relationship between depression and intentions to adhere to medication was mediated by attitudes, PBC and normative perceptions. Using the TPB framework and structural equation modeling, they tested their hypothesis with a sample of breast cancer survivors over a period of 12 months. Results indicated that the TPB was a conceptually salient model, confirming the hypothesized mediational role of attitudes, normative beliefs, and PBC in modifying the depression-medication adherence relationship.

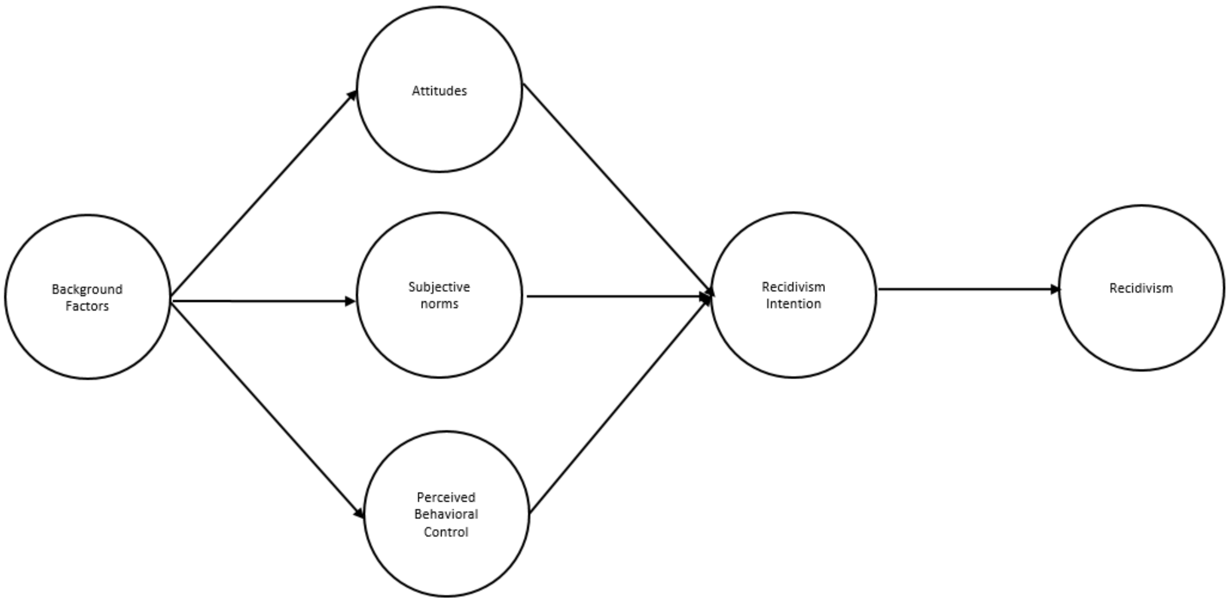

Figure 2. Conceptual Model Showing Background Variables as Antecedents of the TPB in the Context of Juvenile Justice.

The innovation of the addition of background factors to the TPB, which were first posited by Ajzen (2001), prompted the hypotheses in the present research paper. The background variables (i.e., predictors) of interest in the current study are risk factors. These include SU, age at first offense, and number of arrests. Sex will not be considered as an exogenous variable in the current paper because sex is used to calculate the PACT Risk Score (see Method).

Substance use. Adolescent SU has been found to be a robust predictor of recidivism (Simourd & Andrews, 1994; Stoolmiller & Blechman, 2005). Research reveals that a substantial proportion of JJ delinquents also use legal substances and illicit drugs (Chassin, 2008). Early research into the relation between SU and recidivism, however, found mixed results (Van der Put, Creemers, & Hoeve, 2014). This was due in part to the cross-sectional nature of research designs. Further, investigations using longitudinal designs and with larger samples revealed that juveniles with SU problems (compared to juveniles without SU) are more likely to recidivate (Colins et al., 2011; McReynolds et al., 2010; Shubert et al., 2011). According to Stoolmiller and Blechman (2005), juvenile delinquents who use drugs or alcohol are 114% more likely to commit a subsequent offense. Besides correlational and longitudinal designs of the role of SU and re-offending, empirical work exists on the cognitive impairments caused by SU (Blume & Marlatt, 2009). Particularly in adolescence, which is marked by multidimensional cognitive development (Rutter & Rutter, 1993), executive cognitive functions are compromised (Lezak, 1995), and research shows that executive cognitive dysfunction results in impaired decision-making and self-regulation among youth (Chassin & DeLucia, 1996).

Age at first offense. Another robust predictor of juvenile recidivism found in the literature is early onset of age at first offense (Archwamety & Katsiyannis, 1998; Caldwell & Dickinson, 2009; Cottle, Lee, & Heilbrun, 2001). Research shows that early, as compared to late onset can place the youth in two separate trajectories of later delinquency (Patterson & Yoerger, 1997). In the same study, researchers found that that early age at first offense (age 14) was associated to increased adult criminal career versus older ages. More recently, individuals with a first arrest before age 14 have been found to recidivate two additional times (Barrett, Katsiyannis, & Zhang, 2010). This age effect is consistent with previous findings in that being referred to the JJ system before age 14 exacerbates the likelihood of multiple future recidivism events (Elliot, 1994; Katsiyannis & Zang, 2010; Patterson, Forgatch, Yoerger, & Stoolmiller, 1998). Lastly, age at first offense is not only an important variable to study, but early age at first offense can also impair cognitive functioning (Natsuaki, Ge, & Wenk, 2008). For example, individuals with impaired cognitive functioning can lack the ability to plan, maintain, and execute goal-directed behavior (Roberts, Robbins, & Weiskrantz, 1998). Research demonstrates that early onset of first arrest potentially exposes youth to (1) an adverse environment in the criminal justice system (Patterson, Forgatch, Yoerger, & Stoolmiller, 1998) and (2) more opportunities to use drugs at an earlier age (DeLisi, et al., 2013). One study found that youth who had an early onset of age at first offense were four times more likely to experience childhood maltreatment (DePanfilis & Zuravin, 2002). This relation is important because evidence shows how early victimization and child sexual abuse can detrimentally impact neuropsychological functions (Beers & De Bellis, 2002). The second factor that can affect cognition among youth who have an early onset of first arrest is the occurrence of early onset of antisocial behavior (DeLisi, et al., 2013). Namely, youth who are engaged early in the JJ system are more likely to display self-regulatory deficits and lead to various psychological and mental health consequences (Donker, Verheij, & Boon, 2012).

Number of arrests. The third background risk factor that predicts recidivism is number of arrests (Chen, Matruglio, Weatherburn, & Hua, 2005). A greater number of arrests and re-offending as an adolescent is a robust predictor of adult criminal history (Ezell, 2007, p. 38). In particular, this has been a central issue for employers who wish to know if the number of prior arrests is a predictor of future criminality. Bushway (2006) explored the hypothesis that old criminal records can predict recidivism and if given enough time, they would become indistinguishable from non-recidivists. In the same study of young adults, the probability of youth with the same number of arrests does not become indistinguishable up until 6 to 7 years later. The number of prior offenses is also directly related to an increase in the probability of re-offending. Although this study was focused on young males (ages 18 to 25), it could be argued that this also applies to JJ offenders.

Research Questions and Hypotheses

The purpose of this study is to predict (1) recidivism outcomes from the cognitive processes of the TPB and mediated by intentions and (2) predict intentions from background factors and mediated by the cognitive processes of the TPB. Recidivism event data come from the JJ-TRIALS administrative records database and risk factors and TPB cognitive constructs from the PACT, a risk assessment tool. Recidivism is defined as a subsequent referral after the first referral to Tarrant County Juvenile Services (TCJS) in the JJ-TRIALS study. A formal referral is defined as a legal written report by a juvenile board or enforcement agency that states the grounds for breaking a federal or state law. At times, juveniles are referred to alternative programs such as family services or prevention intervention services (Office of the Attorney General, 2018). These types of referrals are not considered in this paper. The current research proposal specifically tests research questions on recidivism (RQ1) and intention (RQ2) using mediation analyses using a novel population

RQ1: Is the TPB a salient model in terms of predicting recidivism as mediated by intentions?

H1: Utilizing a TPB framework, it is hypothesized that a lack of respect (i.e., attitudes), greater peer pressure (i.e., subjective norms), and reduced perceived control will be positively associated with recidivistic activities. The relationships between these cognitive constructs and criminalistics behavior should be positively influenced by the extent to which people intend to recidivate.

RQ2: Do youth background risk factors (i.e., SU, age of first offense, & number of arrests) aid as predictors of intention to recidivate and are they be mediated by the cognitive processes of the TPB (i.e., attitudes, subjective norms, PBC)?

H2: While controlling for participants' level of SU, the age of their first offense, and the number of prior arrests, mediational analyses will be conducted. Although it is believed that all of the background variables are related to whether youth engage in repeated criminal activity, it is hypothesized that number of arrests will be a significant covariate. Specifically, the more times that people are arrested, the less TPB constructs will reduce their intentions to recidivate and, in turn, lead to increased criminal behavior.

Method

Procedure

The current study's data come from two sources, JJ-TRIALS administrative records and the PACT dataset from TCJS. The following sections outline details about TCJS, data collection, data sharing and agreements, data storage, Tarrant County police department booking protocol, and the TCJS arrest process.

Tarrant County Juvenile Services (TCJS). Tarrant County is the third most populous county in the State of Texas and part of the Dallas-Fort Worth metropolitan area. It is operated under the Tarrant County Juvenile Board. Juvenile law violators are documented as exhibiting delinquent conduct or conduct indicating correctional supervision, and are adolescents from the ages of 12 through 17. TCJS operates a 24-hour secure facility, The Lynn W. Ross Juvenile Detention Center, where the alleged juveniles are held for detention or other violations. Some of the programs that TCJS provides to all juvenile delinquents are substance abuse education, counseling, supervision, and recreational activities. For the following analyses, only youth who are under community supervision were considered. Community supervision is defined as being committed under TCJS to either probation or deferred prosecution. The difference between probation and deferred prosecution is that youth under probation, after committing a crime, undergo a formal legal process and are adjudicated delinquent (found guilty). The probation process involves living in the community other than a facility operated by TCJS, and youth are required to attend school, participate in specified services, and meet with their JPO on a regular basis. On the other hand, deferred prosecution is an alternative to formal adjudication where the alleged crime committed by the youth is usually less severe. Under this classification, the youth must not re-offend for up to 6 months and abide by informal conditions which are less strict than probation. If youth comply with these regulations, then their charges can be dropped.

Data collection. The current data is part of a larger project, The Juvenile Justice – Translational Research on Interventions for Adolescents in the Legal System (JJ-TRIALS; Knight et al., 2016). The JJ-TRIALS is a National Institute on Drug Abuse (NIDA) funded cooperative involving six research centers (i.e., Texas Christian University, Columbia University, Emory University, Mississippi State University, Temple University, & University of Kentucky) and designed to study unmet treatment needs among juveniles under community supervision. Within the Texas Christian University (TCU) research center, one of the seven JJ agencies that participated in the study, was the TCJS. Reasons for the use of TCJS data for the present study were (1) proximity to TCU and (2) their implementation of a validated risk assessment (PACT) to all youth, which includes items on attitudes and behaviors relevant to the TPB.

Data sharing. Data sharing agreements were developed and executed between the Texas Juvenile Justice Department (TJJD) and the JJ-TRIALS research team at the Institute of Behavioral Research (IBR) prior to the start of the study. The agreements detailed procedures for confidentiality, data security, data responsibilities, and compliance with laws. JJ youth are an at-risk vulnerable population, so extra consideration was given to protecting the confidentiality of this data. TCU Institutional Review Board (IRB) approval was granted for the study.

Data storage. Part of the data sharing agreement states that data shared between TCJS and TCU-IBR must be stored in a secure password-protected location. This consists of a secure electronic system database. Information collected with respect to youth administrative records is in an identifiable format and de-identification procedures must be met. Unique IDs are assigned by TCJS before sharing with TCU-IBR. Once the de-identified dataset is available through the electronic sharing process, a scramble program written by the author in IBM SPSS was used to further de-identify TCJS data. TCU administrative data comprises of data that has undergone an abstraction process from the Juvenile Case Manage System (JCMS) and transmitted to the TJJD through the Electronic Data Interchange (EDI) and then sent to TCU-IBR. The shared dataset from TCJS includes records of all youth in between October 31, 2014 and October 31, 2018. The same de-identification process is used for PACT variables, but this dataset comes directly from TCJS to TCU-IBR using a secure electronic file sharing platform.

TCJS arrest, structure, and procedure. In Tarrant County, youth alleged of violating a law in the community are usually brought to a police station by a law enforcement officer. Typically, the booking procedure consists of reading the juvenile's rights, searching the youth, and placing all of his/her belongings in a secure location, and being photographed. Youth are then asked to provide a urine sample for analysis and completes a battery of instruments such as a mental health assessment and a risk assessment tool (i.e., PACT). An initial 46-question pre-PACT is administered as a semi-structured interview by a JPO and subsequent PACT administrations consist of the full-PACT, which is populated by the JPO through prior knowledge of the youth and corroborating information. According to TJJD law, "a juvenile probation department must complete a risk assessment for a juvenile (1) before each disposition in a juvenile's case, and (2) at least every six months." (Texas JJ Department, 2019, p. 9). Once the youth is close to completing their community supervision, a final full-PACT assessment is completed. For some youth, depending on the severity of the alleged crime, they are assigned a court hearing and a date for a subsequent risk and/or mental health assessment. If the youth is not required to be housed in a locked facility, they are released to the community; but participation in behavioral and SU services may be required.

Participants

Participants for the proposed study we comprised of youth formally referred to the TCJS. Inclusion criteria included those who are deposed to community supervision, completed a full-PACT, were 17 years or younger, and were in the system for at least 12 months. The cutoff date for the sample was October 31, 2018. The full shared PACT dataset consisted of $N = 2{,}990$ youth. To specify how final N was derived, the initial $N = 2{,}990$ youth from the full dataset were sorted by administration type (full vs. pre-PACT). The $N = 257$ who never received the full-PACT were removed from the dataset. Next, remaining youth were sorted by administration date and it was found that $N = 620$ were administered the full-PACT after the cut-off date and therefore removed from the dataset. Next, to check for further inclusion criteria, remaining youth were sorted by age. It was found that $N = 105$ were older than 17 years of age, possibly still completing their probation terms and conditions, they were removed from the analyses. Additionally, a final check was also performed to see if the remaining youth were on community supervision. It was found that $N = 42$ did not meet criteria for community supervision. The final sample to allow 12 months for the youth to recidivate was $N = 1{,}966$.

Measures

Positive Achievement Change Tool (PACT). The development of the PACT is derived from the Washington Juvenile Court Assessment (WSJCA; Ryan, Williams, & Courtney, 2013). The PACT was created as a suite that assesses the needs/risks of juveniles with the original method of administration as a semi-structured interview. The predictive validity of the instrument been reported by the Florida Department of Juvenile Justice (Baglivio, 2009; Winkour-Early & Blankenship, 2012). Findings revealed that the PACT aids in the prediction of recidivism equally for both female and male juveniles. Lower-risk juveniles were less likely to re-offend versus higher-risk individuals. The receiver operating characteristic (ROC), or area under the curve (AUC) effect size in the study was .59, indicating a moderate effect. This is in line with other reports of JJ risk assessments that are usually between .54 and .79 (Oliver et al., 2009). The PACT has several versions including the pre-PACT, a short 46-question initial assessment, and the full-PACT (128 questions). The PACT is routinely used in JJ agencies nationally and aids in guiding decision making by the staff. The PACT measures both risk and protective factors under a number of domains. Being a risk assessment tool, it is useful for guiding criminogenic needs and treatment placement. By having an informed risk level and sub-domain scores, appropriate resources and services can be allocated to the youth in need.

Theory of planned behavior constructs. Within the full-PACT, various domains contain questions that reflect attitudes, subjective norms, and PBC which are all in relation to delinquent behavior. Each construct was scored the same way, consisting of one question each for a total of three. Original questions were ordered so that each question consisted of four possible answer choices on a Likert-type scale of 1 to 4 with higher scores indicating more nonconformity. The choice options populated by a JPO through prior knowledge of the youth and corroborating information (see Table 1). First, the attitudes variable was taken from Domain 10, Question 7. This question was recoded as *No respect for property* = 1, *conditional respect for property* = 2, *respect for personal property but not publicly accessible property* = 3, *and respects property of others* = 4. The second variable chosen as a proxy of subjective norms was *current resistance to anti-social peer influence* and taken from Domain 6B, Q6. This question was coded as *leads anti-social peers* = 1, *rarely resists, goes along with anti-social peers* = 2, *usually resists, goes along with anti-social peers, and does not associate with anti-social peers* = 4. The third variable that represented PBC was *impulse; acts before thinking* and came from Domain 10, Q4. This variable was coded as *highly impulsive; usually acts before thinking* = 1, *impulsive; often acts before thinking* = 2*, some self-control; sometimes thinks before acting, and uses self-control* = 3*; usually thinks before acting* = 4.

Table 1

Theory of Planned Behavior Items

Attitudes

Respect for others (Domain 10, Q7)

4 = “Respects property of others”

3 = “Respects personal property, but not publicly accessible property”

2 = “Conditional respect for personal property”

1 = “No respect for property”

Subjective Norms

Current resistance to anti-social peer influence (Domain 6B, Q6)

4 = “Does not associate with anti-social peers”

3 = “Usually resists going along with anti-social peers”

2 = “Rarely resists goes along with anti-social peers”

1 = “Leads anti-social peers”

Perceived Behavioral Control

Impulsive; acts before thinking (Domain 10, Q4)

4 = “Uses self-control; usually thinks before acting”

3 = “Some self-control; sometimes thinks before acting”

2 = “Impulsive; often acts before thinking”

1 = “Highly impulsive; usually acts before thinking”

Intention to recidivate. Intention to recidivate was the dependent variable for RQ2 and differentiates itself from actual documented evidence of re-offending. Because there is no direct measure for an intention to recidivate, this study used the PACT risk score as a proxy measure for intention. However, the PACT Scoring Matrix has shown to be a significant predictor of recidivism (Table 2; Baglivio, 2009). According to the TPB (Ajzen, 1991), intention and behavior are independent constructs where the only relation is that intentions influence behavior. Besides theoretical reasoning, a further justification to examine an intention to recidivate is because research shows that a significant portion of all juvenile offenses go undetected (Cunneen & White, 2002). For this reason alone, it is important to identify the predictors and cognitive mediators associated with an intention to recidivate. Because the difficulty of documenting a youth's personal intention to re-offend at intake, operationalization of the intention to recidivate variable was taken from the risk to reoffend score (four categories: low, moderate, moderate-high, vs. high) from the PACT (Early, Hand, & Blankenship, 2012). This variable is constructed from a scoring matrix (see Table 2) comprised of a combination of criminal history and social history originally first described by Baglivio (2009). Specifically, the scoring matrix was created as a table with four columns pertaining to the criminal history score and three top rows corresponding to the social history score. The criminal history score has a maximum score of 31 and the social history score has a maximum of 18 total points where their respective scores are calculated by adding the values of their respective response items. The shared TCJS dataset included a pre-existing risk score, so the creation of the scoring matrix for the current paper was not necessary.

Table 2

PACT Scoring Matrix

Criminal History Score	Social History Score		
	0 to 5	6 to 9	10 to 18
0 to 5	Low	Low	Moderate
6 to 8	Low	Moderate	Moderate-High
9 to 11	Moderate	Moderate-High	High
12 to 31	Moderate-High	High	High

Note. PACT = Positive Achievement Change Tool. Adapted from "Examining the Validity of a Juvenile Offending Risk Assessment Instrument Across Gender and Race/Ethnicity," by M.T. Baglivio and K. Jackowski, 2013, *Youth Violence and Juvenile Justice*, 11(1), p. 30. Copyright 2013 by Sage Journals.

In any case, the criminal history score is computed as an additive score structured into four categories (0 to 5, 6 to 8, 9 to 11, and 12 to 31). These categories were developed in the original validation study from the Florida Department of Corrections (Baglivio, 2009). They are age at first offense (*none or 17+* = 0, *16* = 1, *15* = 2, *13 to 14* = 3, or under *14* = 4, misdemeanor referrals, (*none or one* = 0, *two* = 1, *three or four* = 2, *five or more* = 3), felony referrals (*none* = 0, *one* = 2, *two* = 4, *three or more* = 6), weapon referrals (*one* = 0, *one or more* = 1), against-person misdemeanor referrals (*none* = 0, *one* = 1, *two or more* = 2), against person felony referrals (*none* = 0, *two or more* = 2, *three or more* = 4), sexual misconduct (*none* = 0, *one* = 0, *two or more* = 0), felony sex offense referrals (*none* = 0, *one* = 0, *two or more* = 0), confinements in secure detention (*none* = 0, *one* = 1, *two* = 2, *three* = 3), commitment orders under residential confinement (*one* = 0, *one* = 2, *two or more* = 4), escapes (*none* = 0, *one* = 1, *two or more* = 2), and warrants for failure to appear (*none* = 0, *one* = 1, *two or more* = 2). All of the response items must be answered in order to score the criminal history score.

Within the social history score, the additive score is structured into three categories (0 to 5, 6 to 9, and 10 to 18; Baglivio, 2009). It is calculated from the additive scores of sex (*male* = 1, *female* = 0), school issues (*none* = 0, *enrolled and problems reported by teachers or calls to parents or mostly some full-day unexcused absences or mostly Cs, Ds, and some Fs* = 1, *enrolled and calls to police, or habitual truant, or some Ds and mostly Fs* = 2, *or dropped out, expelled or suspended* = 2), peer affiliations, (*has pro-social friends and no anti-social friends* = 0, *has no friends, or pro social and anti-social friends* = 1, *has all anti-social friends* = 2*, is gang member/associate* = 3), child welfare, (*no out-of-home placements exceeding 30 days* = 0, *one out-of-home placement* = 1, *two out-of-home placement* = 1, *three out-of-home placement* = 1), running away, (*no history of running away* = 0*, one instance of running away/kicked out* = 1, *two to three instances of running away* = 2*, four to five instances of running away*, = 2, *over five instances of running away* = 5), parental imprisonment (*no sibling(s), mother, father jail/imprisonment* = 0*, sibling(s), mother or father jail/imprisonment* = 1), current parental authority control (*minor usually obeys and follows rules* = 0*, sometimes obeys or obeys some rules* = 1, *consistently disobeys, and/or is hostile* = 2), alcohol and drug use, (*yes* = 2, and *no* = 0), physical neglect (*no physical abuse* = 0, or *physical abuse* = 1), victim of neglect *(not a victim of neglect* = 0, or *victim of neglect* = 2), and mental health problems (*no mental health problem* = 0, *diagnosed* = 1, *only mental health medications* = 1, *only mental health treatment prescribed* = 1, or *mental health treatment medications prescribed* = 1).

The overall risk classification score was computed by allocating the social history score into one of the four categories as well as allocating the criminal history score into one of three categories. To calculate the overall risk score, the categories of the social history and criminal history would need to be matched by their rows and columns. According to Early and colleagues

(2012), consensus for constructing the PACT Scoring Matrix was decided based on Florida Departmental policy decisions. Scoring for the PACT in Tarrant County continues to use the proprietary PACT Scoring Matrix. For the purpose of this study, the variable “risk to recidivate” is operationally defined as a proxy for “intention to recidivate” and is a continuous categorical variable comprised of four categories: 1 = *low*, 2 = *moderate*, 3 = *moderate-high*, and 4 = *high*). These categories are derived from the original PACT Scoring Matrix risk levels.

Background Variables

Substance use. Variables indicating history of SU came from Domain 8A of the PACT. Two questions were used: (1) History of minor’s alcohol use, and (2) History of minor’s drug use to assess if there is evidence of prior alcohol or drug use. Items that JPOs are allowed to choose from for evidence of alcohol use are (1) *no alcohol*, (2), *past use of alcohol*, (3) *alcohol disrupted education*, (4) *alcohol caused family conflict*, (5) *alcohol interfered with keeping pro-social friends*, (6) *alcohol caused health problems*, (7) *alcohol contributed to criminal behavior*, (8) *minor needed increasing amounts of alcohol to achieve same level of intoxication or high*, and (9) *minor experienced withdrawal symptoms*. Response items for history of minor’s drug use are (1) *no use of drugs*, (2) *past use of drugs*, (3) *drugs disrupted education*, (4) *drugs caused family conflict*, (5) *drugs interfered with keeping pro-social friends*, (6) *drugs caused health problems*, (7) *drugs contributed to criminal behavior*, (8) *minor needed increasing amounts of drugs to achieve*, and (9) *minor experienced withdrawal problems*.

If a JPO indicates that the youth has either any history of drug or alcohol use from the two aforementioned items, then the variable of SU history in this study was considered as evidence of SU. Response options for History of Minor’s Alcohol Use and History of Minor’s Drug Use are in the format of “all that apply” meaning that the JPOs are allowed to indicate as many or as few items as they wish to as they see fit. The variable of substance history were coded as a sum of the number of items populated by the JPO. The first record of their PACT administration were used to populate this variable. The scale reliability for this scale's items was Cronbach's $\alpha = .681$.

Age at first offense. Age at first offense was asked in Domain 1 of the full-PACT. It is directly stated as "Age at first offense: The age at the time of the offense for which the minor was referred to juvenile court for the first time on a non-traffic misdemeanor or felony that resulted in diversion, adjudication withheld, adjudication, deferred prosecution, or referral to adult court (regardless of whether successfully completed; response options: over 16, 16, 15, 13 to 14, and 12 and under; Florida Department of Juvenile Justice, 2007; p. 1). This variable is recoded as a continuous variable (i.e., 1 = *12 and under*, 2 = *13 to 14*, and 3 = *15*, and 4 = *16*).

Number of arrests. Number of arrests came from Domain 1 of the PACT. They comprised of the aggregate of misdemeanor referrals and felony referrals, both of which are mutually exclusive. The sum of the responses of the two yield the number of referrals. Specifically Domain 1 states that "Referrals that should be included in Domain 1 if either (a) they have a qualifying disposition or (b) if they have no qualifying disposition but they are less than 500 days old from the date of the referral. This includes the current and prior matters. Qualifying dispositions include: any diversion (police diversion, informal contact or Drug Court), deferred prosecution, adjudication withheld, adjudication, or referral to adult court (Florida Department of Juvenile Justice, 2007; p. 1). Response options for misdemeanor referrals are *none or 1*, *2*, *3* or *4*, and *5 or more*. Response options for felony referrals are *none*, *2*, and *3 or more*. Misdemeanor referral is recoded from 1 (*none or 2*) to 4 (*5 or more*) and felony referrals is recoded from 1 (*none*) to 4 (*three or more*). Number of arrests contained the sum of number of misdemeanor referrals and felony referrals. A reliability analysis was conducted on the items and found them to be reliable, Cronbach's $\alpha = .701$.

Recidivism. Recidivism was the primary dependent variable. Recidivism is defined as any re-referral to TCJS. A referral is prompted by exhibiting deviant conduct or unlawful behavior that breaks local or state law. This can happen at school or in the community and includes breaking conditions of community supervision such as violating conditions of probation. The recidivism variable was comprised of recidivism events that occurred from October 31, 2017 through October 31, 2018. First, a variable was created to represent the first time the youth made contact with TCJS in the JJ-TRIALS study (XYEID). This variable is XYEID = 1. Any subsequent re-referral is considered a recidivism event (XYEID = 2). If XYEID = 2 occurs within 30 days of XYEID =1, then XYEID = 3 were used as the recidivism event. Additionally, administrative records included arrest recidivism data (i.e., date, offense type). Offense types can be violent charge, property charge, weapons offense, or other status offense. For very minor offenses, a law enforcement officer may issue a warning notice to the youth in the community or at school. In these circumstances, the law enforcement officer may not detain the youth or refer them to TCJS. A formal referral to TCJS is prompted when the youth has committed a violation in the community or school and must go through the JJ process of TCJS. The TCU administrative data is used to calculate this variable.

Data Analysis Plan

All analyses were conducted using SPSS (Version 25). Preliminary steps were taken to identify patterns for all missing data (i.e., means & standard deviations) for sample characteristics and study variables. A Pearson bivariate correlation matrix reported on all study variables examined their relationships. To confirm that PBC is the strongest predictor of intentions and to confirm a previous analysis using all predictors from the TPB constructs (Kiriakidis, 2008), a hierarchical regression analysis was conducted. Finally, the main analyses were performed in two phases to examine mediation predicting recidivism outcomes (Phase 1) and intention (Phase 2).

Phase 1 of the analysis plan examined the key variables that represent constructs within the TPB and their relation to recidivism outcomes mediated by intentions. To analyze this research question, a mediation model was examined. Due to advancements in mediation testing and more recent methods for evaluating mediation, it is recommended to evaluate the indirect effect of the *X*-*Y* relationship (Mackinnon, 2007). More specifically, because the Baron and Kenny (1986) casual steps do not actually test for how much of a reduction is necessary between Step 3 and Step 1, some researchers resort to testing mediation by an “all-or-nothing” approach in which mediation is deduced based on the alpha level of the regression equation looking at the predictor when the mediator is controlled for and not significant ($p > .05$; Field, 2013, p. 410). As an alternative, a method for evaluating the strength of the indirect effect can be calculated by means of a Sobel Test using the unstandardized coefficients between the predictor and moderator, and outcome. The Sobel Test has good reliability with ample sizes greater than 50 (MacKinnon, Warsi, & Dwyer, 1995). In addition to significance testing, bootstrapping was also reported. Bootstrapping is a statistical technique from which random sampling estimates are taken from the data. From conducting bootstrapping, confidence intervals can be reported as an estimate to perform hypothesis testing.

The purpose of Phase 2 was to examine if background variables as recommended by Ajzen (2001) can aid in the prediction of intentions to act on a particular behavior as mediated by the three constructs of the TPB. To analyze this relation, a total of three sets of models using

SPSS INDIRECT using 5000 bootstrapping samples was tested with each background variable as the predictor, the three constructs from the TPB (attitudes, subjective norms, and PBC) as the mediators, and intentions as the outcome. SPSS INDIRECT is a statistical macro tool that is capable of using ordinary least squares regression analysis and logistic modeling to evaluate mediation. This macro tool is widely used in the social sciences and has the capabilities to test for the indirect and direct effects, and allows multiple mediators.

Results

Preliminary analyses examined whether demographic variables (i.e., age, gender) influenced scores on the predictor (i.e., attitudes, peer pressure, & perceived control) and outcome variables (i.e., intentions to recidivate, recidivism). This was accomplished with a series of simple linear regressions, logistic regressions, t-tests, and one-way analysis of variance (ANOVA) procedures. The results of these analyses were non-significant, *p*s $\geq .05$, suggesting that groups were equivalent across variables.

Descriptive statistics were performed on all demographic variables (see Table 3) and study variables (see Table 4). The results from these statistics revealed that there were overall $N = 1966$ individual youth in the sample from October 31, 2014 through October 31, 2018 on the PACT dataset who were administered the full-PACT. These youth corresponded with the TCU administrative dataset which only contained the recidivism outcome variable. All variables had no missing data except the age at first offense variable ($n = 23$ missing). A closer inspection of this variable reveals that all 23 youth answered “none or one” to record of misdemeanor referrals and “none” to record of felony referrals (from the TCJS PACT dataset). Given that some youth are referred to JJ through the school system, it is possible that these youth genuinely had not ever been arrested.

Table 3

Descriptive Statistics of Sample Characteristics

Variable	*N*	Percentage	Mean	SD
Age				
	1966	100	16.83	1.78
Gender				
Males	1579	80.3		
Females	387	19.7		
Race				
Asian	22	1.1		
Black	835	42.5		
Hispanic	651	33.1		
White	457	23.2		

Note. Descriptive statistics come from the TCJS dataset. All data has been de-identified for the protection of human subjects.

Looking at descriptive statistics of the sample reveal that the mean age was 16.83. The majority of the sample was Black (42.5%), followed by Hispanic (33.1%), White (23.2%), and Asian (1.1%). In terms of gender, there were more males (80.3%) than females (19.7%). Results from the Pearson Bivariate Correlations among all study variables are presented in Table 5. All relationships were assessed at the .05 alpha level. Based on these results, all variables were significantly correlated, $p \leq .001$. However, there were some exceptions with age at first offense not related to attitudes, $p = .509$ and subjective norms, $p = .498$. Also, PBC was not related to recidivism, $p = .209$. All dependent variables are qualified by the central limit theorem.

Table 4

Descriptive Statistics on all Study Variables

Variable	*N*	Mean	Median	Minimum	Maximum
Substance Use	1966	.92	1.00	0	2
Age at First Offense	1943	2.46	2.00	1	4
Number of Arrests	1966	2.02	2.00	1	7
Attitudes	1966	2.40	3.00	1	4
Subjective Norms	1966	2.88	3.00	1	4
PBC	1966	2.56	3.00	1	4
Intention	1966	2.56	3.00	1	4
Recidivism	1966	1.75	2.00	0	1

Note. PBC = Perceived Behavioral Control. Substance use, age at first offense, and number of arrests pertain to background factors. Subjective Norms, PBC, intention, and recidivism pertain to constructs from the TPB. Risk score from the PACT was used as a proxy for intention.

Table 5

Pearson Correlation Matrix on Study Variables

	Variable	1	2	3	4	5	6	7	8
1	Substance Use	1							
2	Age at First Offense	.226**	1						
3	Number of Arrests	.163**	.281**	1					
4	Attitudes	-.221**	.015	-.286**	1				
5	Subjective Norms	-.405**	-.015	-.232**	.421**	1			
6	PBC	-.177*	-.104**	-.124**	.392**	-.391**	1		
7	Intention	.321**	-.268**	.531**	-.360**	-.457**	-.369**	1	
8	Recidivism	.073**	-.110**	.253**	-.108**	-.082**	-.208	.202**	1

Notes. **Correlation is significant at the .05 level (2-tailed). PBC = Perceived Behavioral Control.

Findings from Hierarchical Regression

To examine if the current study would replicate previous work of the prediction of intentions to re-offend from the predictors of the TPB, a hierarchical regression was conducted. Results from the hierarchical regression showed that subjective norms was the highest significant contributor, b = -.30 followed by PBC, b = -.18, and attitudes, b = -.17 (see Table 6).

Table 6

Hierarchical Regression Analysis of Intentions on Attitudes, Subjective Norms, and PBC.

Predictor	b	R^2	R^2 *Increment*	F
Attitudes	-.174**	.360	.129	291.67**
Subjective Norms	-.295**	.493	.113	314.501**
PBC	-.180**	.519	.026	240.78**

Note. N = 1966, ** $p < .001$.

Findings from RQ1. To test the relationship between the three cognitive constructs (attitudes, subjective norms, & PBC) and recidivism outcomes as mediated by intentions, a parallel mediation model was tested using three predictors (see Figure 3). First, the total effect paths were computed by regressing recidivism on attitudes, subjective norms, and PBC using logistic regression. The results of path c_1 showed an odds ratio of .70 of not re-offending for those with higher attitudes, b = -1.75(SE = .017), Wald = 22.5, $p \leq .001$, R^2 = .17, 95% CI [-1.83, -1.45]. The path from c_2 was also found to be significant with an odds ratio of .76 of not re-offending for those with higher subjective norms, b = -.21(SE = .058), Wald = 12.72, $p \leq .001$, R^2 = .09, 95% CI [-.65, -.08]. Also, the c_3 path was significant with an odds ratio of .93 of not re-offending for those with higher PBC, b = -.08(SE = .062), Wald = 1.58, $p \leq .001$, R^2 = .11, 95% CI [-.12, -.01]. The a paths were then individually calculated using linear regression for all three predictors and found to be significant. Results from the a paths were significant for attitudes, b = -.42(SE = .08), t = 17.08 , $p \leq .001$, 95% CI [-.46, -.37] , subjective norms, b = -.43(SE = .06), t = 22.7, $p \leq .001$, 95% CI [-.74, -.34], and PBC, b = -.36(SE = .03), t =15.59, $p \leq .001$, 95% CI [-.65, -.23]. Next, the b path was then calculated by treating the mediator as the predictor while the three predictors were also in the model using logistic regression and the odds ratio of re-offending was 1.90 for those with higher intentions to recidivate, b = .61(SE = .07), Wald =

63.83, $p \leq .001$, $R^2 = .07$, 95% CI [.06, 1.00]. Finally, three separate regression equations were calculated to predict recidivism from the three constructs and controlling for intentions using logistic regression. Results from the c'_1 path was found to be significant with an odds ratio of .87 of re-offending for those with higher attitudes, $b = -1.23$($SE = .09$), Wald = 2.96, $p \leq .001$, $R^2 =$ .07, 95% CI [-1.35, -.1.13]. The c'_2 path was also significant with an odds ratio of 1.87 re-offending for those with higher subjective norms, $b = -.21$($SE = .04$), Wald = .28, $p \leq .001$, $R^2 =$ .06, 95% CI [-.31, -.11]. Lastly, the c'_3 path was significant with an odds ratio of 1.17 of re-offending for those with higher PBC, $b = -.20$($SE = .07$), Wald = 5.14, $p \leq .001$, $R^2 = .06$, 95% CI [-.24, -.11]. Lastly, a Sobel test was performed to evaluate the strength of the mediator using the three separate predictors. Results from these tests showed the effects for attitudes, $z = 4.49$($SE =$ .06), $p \leq .001$, subjective norms, $z = 5.55$($SE = .05$), $p \leq .001$, and PBC, $z = 4.43$($SE = .03$), $p \leq$ .001.

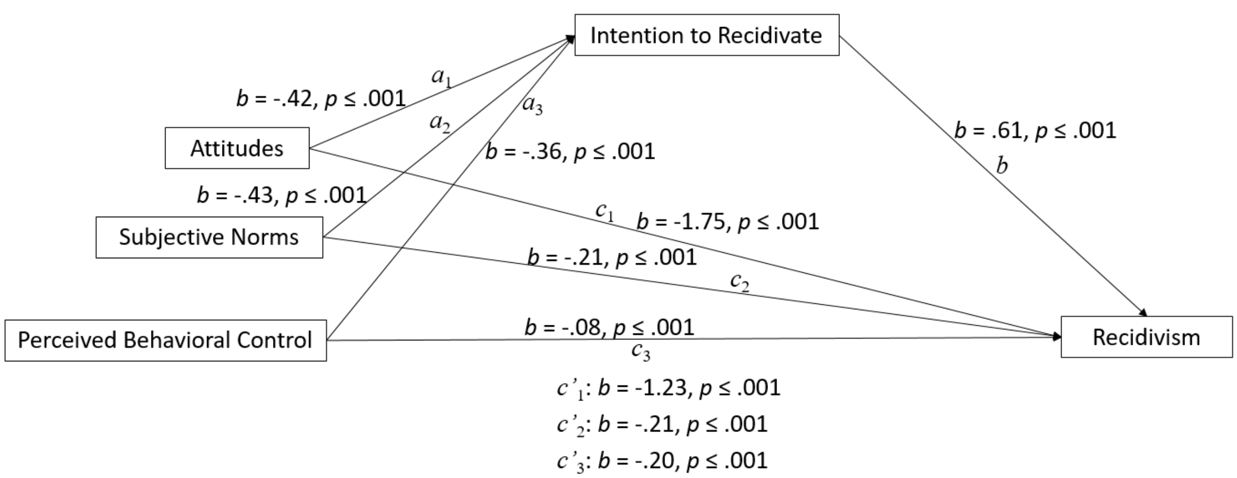

Figure 3. Model 1 – Predicting Intention from Attitudes, Subjective Norms, and PBC as Mediated by Intention

Findings for RQ2. For phase 2, three separate parallel mediation model sets were evaluated for the presence of mediation using the SPSS INDIRECT software macro. For the first model set in Phase 2 (see Figure 4), intentions was regressed on SU and mediated by attitudes, subjective norms, and PBC. Results showed the direct effect was found to be significant, *b* = .30(*SE* = .02), *t* = 15.03, $p \leq .001$, 95% CI [.24, .39]. The path predicting attitudes from SU was found to be significant, *b* = -.18(SE = .02), *t* = 10.04, $p \leq .001$, 95% CI [-.22, -.15], as well as subjective norms, *b* = -.41(SE = .02), *t* = 17.67, $p \leq .001$, 95% CI [-.53, -.29], and PBC, *b* = -.05(SE = .01), *t* = .25, 95%, $p \leq .001$, CI [-.09, .01]. To examine path *b* with intentions as the outcome and the three cognitive constructs as the predictors, results showed paths to be significant for attitudes, *b* = -.17(*SE* = .03), *t* = 6.55, $p \leq .001$, % CI [-.22, -.11], subjective norms, *b* = -.24(*SE* = .02), *t* = 11.39, $p \leq .001$, 95% CI [-.28, -.10] and PBC, *b* = -.34(*SE* = .02), *t* = 8.48, $p \leq .001$, 95% CI [-.43, -.14]. Lastly, the total effect was found to be significant, *b* = .14(*SE* = .02), *t* = 7.20, $p \leq .001$, 95% CI [.26, .34]. The total model summary on the dependent variable yielded R^2 = .28. To examine the strength of the indirect effect of SU and intention via the three mediators, the Sobel test was found to be significant for attitudes, *z* = 5.49(*SE* = .05), $p \leq .001$, subjective norms, *z* = 9.86(*SE* = .10), $p \leq .001$, and *PBC*, z = 5.80(*SE* = .053), $p \leq .001$.

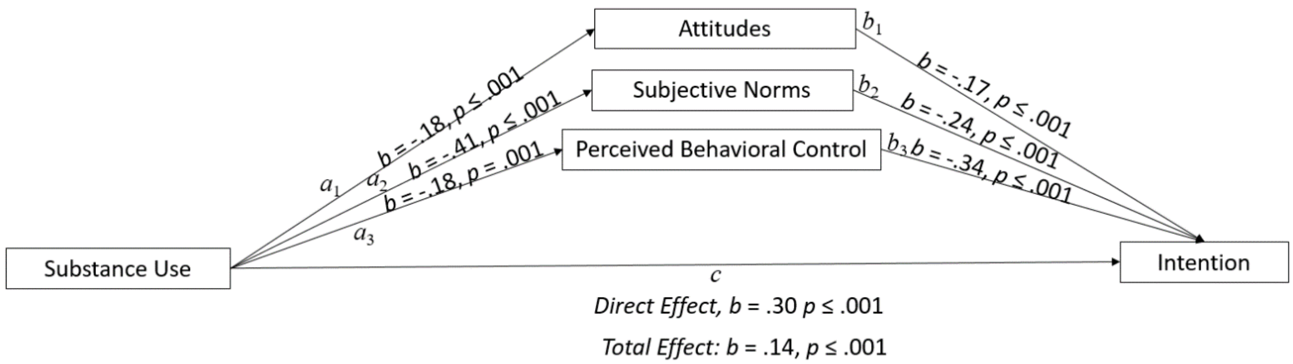

Figure 4. Model 2 – Predicting Intention from Substance Use as Mediated by Attitudes, Subjective Norms, and PBC

The second step of Phase 2 was concerned with the prediction of intentions from age at first offense as the predictor (see Figure 5). Because age at first offense was not found to be correlated with attitudes or subjective norms from the Pearson correlation matrix, the second model only examined PBC as a potential mediator. In this fashion, a mediation model using the INDIRECT software macro examined the prediction of intentions from age at first offense as mediated only by PBC. In this single mediation model, the direct effect was found to be significant, b = -.22(SE = .01), t = 11.30, $p \leq .001$, 95% CI [-.24, -.15]. The path from age at first offense to PBC was also found to be significant, b = .09(SE = .02), t = 4.6, $p \leq .001$, 95% CI [.05, .12]. Additionally, the path from PBC to intentions was also significant, b = -.34(SE = .02), t = 16.92, $p \leq .001$, 95% CI [-.42, -.30]. Finally, the total effect was also found to be significant, b = -.19(SE = .01), $p \leq .001$, 95% CI [-.21, -.16]. The total model summary on the dependent variable yielded R^2 = .20. Finally, a Sobel test evaluating the strength of the mediator was found to be significant, z = 4.43(SE = .06), $p \leq .001$.

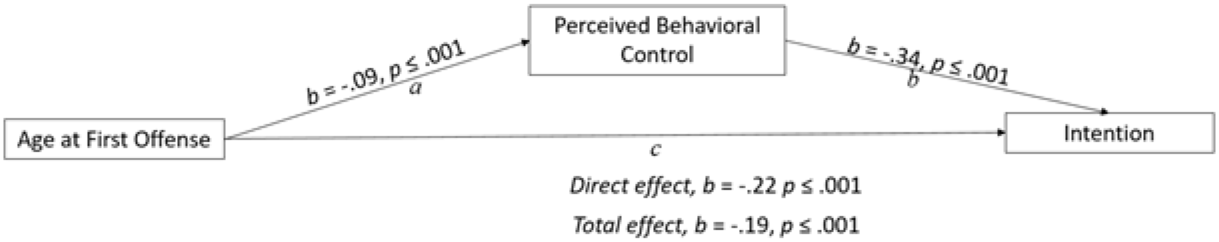

Figure 5. Model 3 – Predicting Intention from Age at First Offense as mediated by PBC

For the last mediation model of Phase 2, intentions was regressed on number of arrests as mediated by the three cognitive constructs of the TPB, attitudes, subjective norms, and PBC (see Figure 6). Results from the INDIRECT macro software macro showed the path from number of arrests to attitudes was found to be significant b = -.26(SE = .05) t = 13.23, $p \leq .001$, 95% CI [-.35, -.20], as well as number of arrests to subjective norms, b = -.21(SE = .02), t = 10.54, $p \leq .001$, 95% CI [-.29, -.17], and the path from number of arrests to PBC, b = -.11(SE = .09), t = 5.54, $p \leq .001$, 95% CI [-.25, -.06]. Results examining the path from attitudes to intention was also found to be significant, b = -.17(SE = .05), t = 2.55, $p \leq .001$, 95% CI [-.24, -.13], as well as subjective norms to intention, b = -.24(SE = .02), t = 13.29, $p \leq .001$, 95% CI [-.35, -.13], and PBC to intention, b = -.34(SE = .18), $p \leq .001$, 95% CI [-.26, -.04]. Results of the total effect were found to be significant, b = .44, (SE = .0159), t = 23.74, $p \leq .001$, 95% CI [.38, .54], as well as the indirect path, b = .36(SE = .35), t = 24.23, $p \leq .001$, 95% CI [.24, .49]. The total model summary on the dependent variable yielded R^2 = .44. To examine the strength of the indirect pathway with the three mediators in the model, results showed all three significant mediators contributing to the model. They were attitudes, z = 2.51(SE = .05), p = .012, subjective norms, z = 8.26(SE = .06), $p \leq .001$, PBC, z = 4.86(SE = .04), $p \leq .001$.

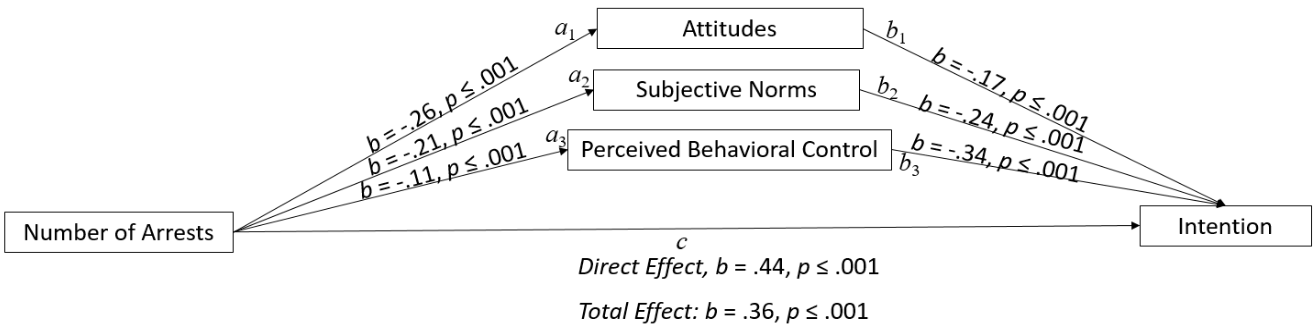

Figure 6. Model 4 – Predicting Intention from Number of Arrests as Mediated by Attitudes, Subjective Norms, and PBC

Discussion

Juvenile crime and incarceration continues to be a pervasive issue in the United States. As juveniles are imprisoned and out of their community, it is detrimental to their normal development. One way to maintain juvenile delinquents in their community while receiving an alternative form of future crime deterrence is community supervision. Part of the current JJ system aims to rehabilitate youth while using resources in the community such as mental health counseling and substance abuse programming. Although the JJ system evolved drastically from a system of restitution and punishment, research concerned with juveniles under community supervision is often less studied. Even far less studied are the thought processes of JJ-involved youth under community supervision with respect to recidivism outcomes.

The purpose of this study was to contribute to the literature concerned with the prediction of recidivism outcomes and intentions of JJ-involved youth under community supervision. Specifically, this project extended the application of the TPB to aid in the prediction of recidivism intentions and recidivism outcomes using a sample from Tarrant County, Texas. This project used the TPB as a starting model to better explain the relationships among cognitive constructs as they relate to intentions and behaviors. In 1991, Ajzen proposed the TPB, a psychological model that predicted behavioral outcomes and has since been an influential conceptual model in not only psychology, but marketing, advertising, and healthcare. The TPB is composed of three cognitive constructs that can predict an intention to act on a particular behavior and consequently a behavioral outcome. After the first paper on the model, Ajzen advocated for the inclusion of background factors to models of the TPB to be used as antecedents. Up to that point, studies assessed background characteristics as control variables. The purpose and practical consideration to use background factors as antecedents of TPB models is that one can assess not only the correlations, but also if the theory's predictors can mediate the effect of intentions and behavioral outcomes.

The first goal of the paper was to replicate the only study that has ever examined the TPB in a JJ setting (Kiriakidis, 2008). Their study found that PBC, attitudes, and subjective norms independently contributed to prediction of intentions to re-offend. The rationale for the significance of PBC as the strongest factor to emerge in their model as a predictor of intentions to re-offend was explained in terms of self-control. In other words, youth who had lower self-control seem to be less able to be in control of intentions to re-offend. Unexpectedly, results from the hierarchical regression in the current paper showed that subjective norms was the strongest independent contributor to intentions to recidivate, followed by PBC, and then attitudes. Although it was originally thought that PBC would emerge as the strongest predictor of intentions to re-offend, the reason for attitudes emerging as the strongest predictor in the current model also has theoretical merit. In the current study, attitudes was measured as respect for others. Past research regarding attitudes towards authority and respect for others among juveniles reveals that respect for others varies as a product of social levels and that youth of higher socioeconomic status (SES) showing more favorable attitudes in comparison to lower socioeconomic youth (Janeksela, 1999). A closer inspection of the PACT (Domain 7B: Current Living Arrangements) reveals that only 4% of the sample was not on poverty level. Other research has revealed that lower SES juvenile youth have less favorable attitudes towards police and lower attitudes towards respect for authority in general (Kerby, Joanne, Rae, 1998). Future researchers using the TPB should consider using SES as a moderating factor, however, recruitment of high-SES juvenile delinquents under community supervision might be difficult. In a like manner, because the current study used the PACT calculated risk score as a proxy of intention to recidivate, it was possible to confirm previous literature on the prediction of recidivism outcomes. As expected, and after controlling for attitudes, subjective norms, and PBC, there was a higher odds ratio of re-offending with an increased risk score.

Results focused around RQ1 examined the influence of risk score as a potential mediator that could explain the relationship between the cognitive constructs and recidivism. Past research on the TPB in general has revealed that the intention variable can mediate the relationship between the cognitive predictors and the behavioral outcome. The results from this paper found that as youth indicated more favorable attitudes, subjective norms, and PBC, they were related to lower risk scores. In turn, the higher intentions, the more likely they were to recidivate. Looking at the indirect effects, regardless of the predictor, the indirect effect had a moderate to strong effect. The importance of the indirect effect in this model suggests that the cognitive constructs can predict recidivism, however, by adding the mediator of intentions and controlling for the predictors, the model can better predict the odds of recidivism. Clinically speaking, this finding is highly remarkable in the fact that the addition of the intentions in relationship between the independent variables and recidivism can be better explained. Future work should replicate these findings.

Looking at RQ2, the three mediation model sets that were conducted appeared to have a similar pattern of results with the exception of Model 3. With respect to Model 2, the direct path of SU to intention to recidivate had a positive and significant relationship. In other words, higher indications of SU lead to a higher intention to re-offend. This finding confirms previous research on the association between SU and increased risk to recidivate (D'Amico, Edelen, & Miles, 2008). Additionally, the three cognitive constructs were found to mediate the relationship between SU and an intention to recidivate. In other words, the relationship between SU and intention to recidivate can be better explained by the addition of the three constructs. In previous models looking at the influence of SU and risk levels among juveniles has found that personal impulsivity and attitudes might be a mediating mechanism (Jones, Lynam, Piquero, 2015). They found that not only is SU related to increase crime and risk, but the path to higher impulsivity measured by the inability to seek future rewards mediates risk levels. In a similar manner, the present study found that the path from SU to risk level is mediated by PBC which is measured by impulsivity. Part of the reason for the significant indirect path from SU to intentions through PBC is that SU can alter parts of the brain associated with self-control. As a consequence, the use of drugs compounded by lower levels of self-control is associated with a greater risk of recidivism. Next, although research that has looked at the association of SU and attitudes and subjective norms, the relationship between SU and risk of recidivism as mediated by attitudes and subjective norms has not been directly examined in the literature. In the present paper, given by the directionality of the indirect pathways, greater SU lead to lower attitudes and subjective norms. In turn, greater attitudes and subjective norms lead to lower risk levels.

In Model 3, only age at first offense was able to be examined as a predictor. In this model, the directionality of the direct effect was as planned. A lower age at first offense led to an increased risk of recidivism. Also, by the inclusion of PBC, the indirect pathway remained significant in the sense that a lower age at first offense lead to lower PBC. In turn, higher PBC lead to a lower risk of recidivism. The clinical importance of this finding is noteworthy of discussion. Given that previous literature has found that an earlier encounter with the law leads to more future criminality (Archwamety & Katsiyannis, 1998; Caldwell & Dickinson, 2009; Cottle, Lee, & Heilbrun, 2001), it was expected here that an earlier age at first offense would lead to increased risk of recidivism. However, by the inclusion of PBC, it is clear that self-control mediates the relationship between age at first offense and risk of re-offending. Although the measures of age at first offense and risk of recidivism were taken in a cross-sectional manner, related research using longitudinal methods has suggested that not only age at first offense are related to increased risk of recidivism, but also earlier drug violations, and earlier treatment initiation (Peters, Haas, & Murrin, 1999). Future studies should consider a wider range of variables with respect to an earlier onset with the law and its relationship to risk levels. If so, it would be notable if PBC could serve as a potential mediator. One author described the relationship from earlier age at first offense and decreased self-control in terms of learning mechanisms (Van der Put, Creemers, & Hoeve, 2014). It was noted that during earlier encounters with the law, especially in correctional settings, coercion and antisocial norms are learned faster. Thus, in the present paper, it is understandable that PBC can mediate the association between age at first offense and intention to recidivate.

In terms of the findings from Model 4, they implicate that there is an association between number of prior arrests and an intention to recidivate. Also, the indirect paths using the three cognitive constructs from the TPB were significant. In other words, the inclusion of the three constructs can better explain the pathway to risk of recidivism. Past research has documented the association between past number of juvenile arrests and future number of crimes (Kurlychek, Brame, & Bushway, 2006). However, the relationship between number of arrests and risk of recidivism has not been examined in the context of developmental criminology. The current paper shows here that there is a direct and positive relationship between number of arrests and an increased risk score. While this finding is not surprising, more interestingly, the inclusion of the three cognitive constructs in the model suggest that increased attitudes, subjective norms, and PBC, they are all associated with a decreased risk of recidivism. Clinically speaking, these findings provide evidence that not only does number of arrests predict a higher risk score in a JJ setting, but thought processes like attitudes, subjective norms, and PBC can be associated with lower risk scores. Given these results, JJ agencies could inform counselors and providers about the importance of cognitions pertaining to the TPB. These relationships could be conveyed in JJ agencies via brochures or additional training.

Altogether, Model 1 was a direct replication of the original TPB as theorized by Ajzen (1991) in the context of JJ. This is a significant contribution to the literature in a number of ways. First, this is among the few studies to have non-self-reported data as a measure of the TPB. The data used from the PACT was populated using JPO knowledge and corroborated through prior casework. As previously stated, self-reported data tends to be under-reported by juvenile-involved youth, so JPO knowledge could be best suited for the TPB in a JJ context. Since the TPB constructs came from the full-PACT and completed by the JPO in direct supervision with the youth in this sample, the data should be more accurate than if it was self-administered. Also, model was able to predict the association between PACT risk scores and a youth coming back to the system within one year. Although previous literature has confirmed this association, this is among the first to do so in a sample of juvenile justice-involved youth under community supervision. Being the case that the terms of community supervision pertain to refrain from committing crimes and attend treatment services, it was found that the PACT is a good predictor of committing a future offense in the next year.

Collectively, the results from RQ2 also add to the literature confirming that more favorable attitudes, subjective norms, and PBC all can predict lower intentions. In other words, one could say that the more favorable or positive responses to the TPB constructs were associated with lower intentions to commit a future offense. These findings confirm previous research found by Kiriakidis (2008) who asked youth in a correctional institution similar questions. Their results showed that PBC was the strongest contributor of intention to commit a future offense followed by personal norms, attitudes, and then subjective norms. However, this was not supported in the present study as subjective norms was the strongest independent contributor to intentions, followed by PBC and then attitudes. These patterns of results were unexpected and ultimately future work should replicate the present findings and examine if other variables found within the PACT could serve as a better proxy for PBC. Additionally, future studies, examining the application of the TPB among JJ youth should consider also including both personal norms as well as other social norms besides peer influence.

Clinical and Policy Implications

The main goal of a risk assessment is to accurately predict recidivism from a number of predictors that revolve around illegal behaviors and delinquency (Vincent, Guy, & Grisso, 2012). Risk assessments are an integral part of not only data collection within correctional agencies, but are able to provide resource and information regarding risk factors related to criminality. It should be noted that because risk assessments have evolved from unstructured and simple forms as part of intake batteries to highly structured assessments, they have their limitations. For example, Vincent and colleagues (2012) described four limitations of juvenile risk assessments: (1) “they are not prescriptive,” (2) “they are not guided for sexual offending,” (3) “they are not mental health assessments,” and (4) “they do not prescribe legal decisions.” Because not all justice agencies have implemented risk assessments nationwide, it should be noted that if they wish to implement risk assessments as part of their intake battery, they should do so with caution. While successful implementation of a risk assessment does not have a one-size-fits-all procedure, there are important recommendations found in the literature; including early involvement with field staff, field staff training, integration with other agency activities, and feedback monitoring (Young, Moline, Farrell, & Bierie, 2006). With this in mind, agencies who do plan to integrate risk assessment tools should consider the aforementioned recommendations.

With respect on how the current findings from the paper can inform clinical practice, both the need and risk principles are of direct relevance. The need principle states that only factors that are able to be malleable and able to reduce with relevance to reoffending should be targeted. While receiving services and treatment programming in the JJ system, both clinical assessments and actuarial risk tools serve as a first line of defense for documenting needs and risk factors of recidivism. One possible recommendation from the findings of this paper is that factors pertaining to attitudes, subjective norms, and PBC should be documented in the juvenile’s casework. Because risk assessment tools have a wide range of domains that can explore thought processes, attention should be given to the factors such as the ones pertaining to the TPB. Because it was found that attitudes, subjective norms, and PBC can mediate the relationship between background factors and the risk score of the same instrument, special attention should be given to documenting those factors. Once documented, because those factors are related to criminological behavior, the need principle would specify that they should be targeted during treatment programming.

Also, the risk principle states that that higher risk offenders should be given higher intensity treatment in comparison to lower risk offenders (Lipsey, 1999). With the help of clinical assessments and risk tools, correctional services can be best allocated in order to match their offending level. A recommendation to healthcare providers based on the findings of the current paper is that special attention should also be given to attitudes, subjective norms, and PBC. Namely, these factors relating to the thought processes of cognition among juvenile offenders could be useful information to better tailor treatment programming. For example, Bourgon and Armstrong (2005) documented that on average, youth offenders receive anywhere from 100 to 500 hours of programming. However, related research has found that more hours of programming than is necessary may place youth on a negative recovery path (Andrews & Dowden, 2006). In the same study, once a youth is placed under the terms and conditions of treatment, it is tough to legally alter the number of hours of programming.

Looking at the current findings from a policy standpoint, research has documented the importance of quality treatment programming and its relation to recidivism rates (Lowenkamp, Latessa, & Smith, 2006). As an example, Lowenkamp and associates (2006) using a nationally derived sample concluded that “highly quality” treatment programming as opposed to “low quality” can make a difference of up to 22% reduced recidivism. As the future and refinement of treatment programming advances, one recommendation for future policy implications is to conduct research that is able to track changes in the thought processes relating to the TPB. If future work can show that these factors can be changed through targeted interventions, then it would be a refinement of the risk principle.

Limitations

While this study was able to conceptualize and use the TPB as a model to examine intentions and recidivism outcomes of JJ youth, this study had some limitations that should be addressed. First, this sample of youth under community supervision did not include youth who may have been referred to alternative placement forms for their delinquency such as traffic court or diversion programs. In the previous discussion on the types of youth that exist in the JJ system, they can be situational offenders, naïve offenders, violent, or possibly property offenders. While this study's main objective was not to report these categories, it is not entirely known what type of offender these youth fall under, other than confidently saying that they are under community supervision. Under the terms of community supervision, their crime had to be of a certain elevated offense that they had to be placed under these stipulations. It is possible that situational offenders may not be representative of this sample and others do get placed under community supervision. In other words, a problem that could arise with the interpretability and generalization of the results found in this project is that it does not capture the cognitive processes of youth who were could be deferred to alternative programs.

In addition, these youth in Tarrant County may only be representative of the community that they are derived from and therefore generalizations to a larger national population cannot be made. Because there are sanctions, restrictions, and policies under the terms of community supervision, youth are also receiving some form of education against gang affiliation, and engaging in community service. Since receipt of services was not accounted for in the present models, it not known if it had an impact on their recidivism outcome. For example, a youth could receive mental health services upon entering the terms of community supervision while another youth could receive drug rehabilitation services instead while having the same risk score on the

PACT. In this case, it is not known if the effect of these services have a direct influence on recidivism outcomes.

Next, because of the cross-sectional nature of the all measures except recidivism, results from the mediational models of background factors through intentions cannot infer causality. Future studies should replicate these findings longitudinally and take into account additional confounding variables. Additionally, because intention was not asked directly and used risk of recidivism as a proxy, future studies could ask youth directly if they intend to re-offend. Comparative studies could look at if a risk score or a self-questionnaire of intentions is a more robust measure. It could be argued that institutionalized youth, that is, youth who are past the point of rehabilitation and reintegration into society by their normalization in the System, asking them directly to self-report their intent to re-offend could be a better measure for intention. Next, research has revealed that although males, compared to females are at a higher risk for recidivism (Hodge, 2002), research reveals that historically, violent crimes among females continues to increase (Lind & Pasko, 2013). Because the current paper did not study the moderating role of gender, given its importance, future work should include gender as a variable in TPB models. In addition, future work could examine other covariates such as age. However, in spite of these limitations, JJ agencies and administrators can interpret these results and keep using the PACT as a robust predictor of recidivism.

In all, this research study was able to expand on a vastly popular psychological theory of intentions and behavior and apply it to a JJ setting. Because this is one of the first ever attempts at using an American sample of JJ youth to evaluate the TPB, the intention variable was not asked directly as it was not available as in Kiriakidis (2008; i.e. “I intend to offend in the future”). Taking their results as a basis for this paper, and the fact that youth crime is always greater than self-reported data, it is likely that asking youth if they intend to re-offend would create a response biases in and under-report their answers. In Kiriakidis (2008), their sample was composed of very short sentenced youth and their risk level is not known, so ultimately, direct comparisons cannot be made. In the American JJ system, asking a youth under community supervision if they intend to re-offend could be heavily biased. Perhaps the use of an empirical and established measure for a risk of recidivism is arguably a useful proxy.

In conclusion, this project adds to the literature concerning the applicability and testing of the TPB in the context of a JJ setting. The pattern of results found in this project are important not only to the advancement of theory, but also able to inform parents, practitioners, administrators, and policy makers alike. Future work is necessary to replicate the current findings and use newer psychological models of cognition to study recidivism. The thought processes of juveniles during such a critical time of brain development is an important area of research which should be studied in different social environments neighborhoods. Investigators should also consider and analyze the welfare and current policy implications that could be currently altering the thought processes of youth involved in the JJ arena. Taken as a whole, quality and inclusive JJ research can be a major tool for policy makers to delineate criminal justice reform.

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ABSTRACT

AN EXAMINATION OF THE THEORY OF PLANNED BEHAVIOR AND THE PREDICTION OF INTENTIONS AND RECIDIVISM OUTCOMES AMONG JUVENILE JUSTICE YOUTH

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The research within the Juvenile Justice System in the United States continues to focus on factors associated with the efficacy of treatment programs and receipt of services. However, often less studied are the cognitive processes of Juvenile Justice Youth in relation to their prediction of recidivism outcomes. Using the TPB as a framework to study the relationships of background factors, intentions, and recidivism outcomes, mediation analysis was the basis of the study. The following study provides evidence that recidivism outcomes can be predicted by cognitive-based constructs and mediated by intentions. Further, it was also found that number of arrests is a strong predictor of recidivism from background factors as mediated by the same cognitive-based constructs. Overall, these results should emphasize that the TPB is a salient model in the prediction of intentions and recidivism outcomes.