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Personality Style and HIV Risk Behavior among Adolescent Substance Abusers

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PERSONALITY STYLE AND HIV RISK BEHAVIOR AMONG ADOLESCENT SUBSTANCE ABUSERS

By

Stephanie E. Diamond

A DISSERTATION

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PERSONALITY STYLE AND HIV RISK BEHAVIOR AMONG ADOLESCENT SUBSTANCE ABUSERS

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The purpose of this study was to investigate relationships between four personality styles and two important indications of HIV risk behavior, at intake and 3-month follow-up, among a sample of adolescents participating in court-mandated substance abuse treatment in conjunction with an HIV prevention intervention. This study involved a secondary analysis of data from a NIDA funded project (1R01DA011875-01, R. Malow, PI). Predictor variables included levels of antisocial (unruly), dependent (submissive), avoidant (inhibited), and borderline (borderline tendency) personality styles drawn from scales of the Million Adolescent Clinical Inventory (MACI). Criterion variables included number of sexual partners and percentage of sex acts unprotected, derived from the Risk Behavior Assessment (RBA). A series of hierarchical regression analyses were conducted to test study hypotheses. Analyses controlled for age, ethnicity, education, gender, intervention status, the three personality variables not central to the hypothesis being tested, and baseline values of sexual risk behavior, when relevant. Results from the multiple regression analyses failed to support study hypotheses, indicating that adolescent personality styles were not important predictors of HIV risk behavior. Results are discussed within the context of the relevant literature. Study limitations and recommendations for future research are noted.
Dedication

This dissertation is dedicated to my parents, Harriet and Ron Diamond, who from as early as I can remember, have always supported me in reaching for the gold ring.

And to my husband David, who encourages and promotes my dreams and aspirations every day. Now I can truly come away with you...
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# Table of Contents

List of Tables v

**Chapter One: Introduction and Review of the Literature** 1  
Introduction 1  
Review of the Literature 5  
- Understanding the Structure and Determinants of Risk 5  
- Personality, Millon’s Biosocial Learning Theory, and Adolescents 10  
- The Antisocial Style 14  
- The Dependent Style 23  
- The Avoidant Style 26  
- The Borderline Style 29  
Study Purpose and Hypotheses 34

**Chapter Two: Methods** 37  
Data 37  
Recruitment 37  
Sample Characteristics 38  
Intervention Procedures 38  
Assessment Procedures 39  
Measures 40  
Preliminary Analyses 46  
Primary Analyses 46

**Chapter Three: Results** 48  
Preliminary Analyses 49  
- Attrition Analyses 49  
- Normality, Outliers, and Missing Values 49  
Primary Analyses 50  
- Hierarchical Regression Analyses 50  
Supplemental Analyses 61

**Chapter Four: Discussion** 66  
Unique Challenges and Implications 68  
Other Explanations for Null Findings 74  
General Limitations and Suggestions for Future Research 77  
Adolescent Personality and Risk Behavior: Future Considerations 79

Tables 82

References 88
Appendices 101
Appendix A: Millon Adolescent Clinical Inventory 101
  Unruly Scale Items 101
  Submissive Scale Items 102
  Inhibited Scale Items 103
  Borderline Tendency Scale Items 104
Appendix B: Risk Behavior Assessment 105
Appendix C: IRB Approval Letter from Human Subjects Research Office 107
List of Tables

Preliminary Analyses Tables
Table A1. Participant Characteristics 82
Table A2. Descriptive Statistics for Predictor and Criterion Variables 83
Table A3. Correlations among Predictors and Criterion Variables 84

Primary Analyses: Hierarchical Regression Tables
Table 1. Baseline # of Sex Partners and Unruly Personality Style 52
Table 2. Follow-up # of Sex Partners and Unruly Personality Style 52
Table 3. Baseline % of Unprotected Sex Acts and Unruly Personality Style 53
Table 4. Follow-up % of Unprotected Sex Acts and Unruly Personality Style 54
Table 5. Baseline % of Unprotected Sex Acts and Submissive Personality Style 55
Table 6. Follow-up % of Unprotected Sex Acts and Submissive Personality Style 56
Table 7. Baseline # of Sex Partners and Inhibited Personality Style 56
Table 8. Baseline % of Unprotected Sex Acts and Inhibited Personality Style 57
Table 9. Follow-up % of Unprotected Sex Acts and Inhibited Personality Style 58
Table 10. Baseline # of Sex Partners and Borderline Personality Style 58
Table 11. Follow-up # of Sex Partners and Borderline Personality Style 59
Table 12. Baseline % of Unprotected Sex Acts and Borderline Personality Style 60
Table 13. Follow-up % of Unprotected Sex Acts and Borderline Personality Style 61

Supplemental Analyses: Hierarchical Regression Tables
Table A4. Baseline # of Unprotected Sex Acts and Unruly Personality Style 85
Table A5. Baseline # of Unprotected Sex Acts and Submissive Personality Style 85
Table A6. Baseline # of Unprotected Sex Acts and Inhibited Personality Style 85
Table A7. Baseline # of Unprotected Sex Acts and Borderline Personality Style 85
Table A8. Follow-up # of Unprotected Sex Acts and Unruly Personality Style 86
Table A9. Follow-up # of Unprotected Sex Acts and Submissive Personality Style 86
Table A10. Follow-up # of Unprotected Sex Acts and Inhibited Personality Style 86
Table A11. Follow-up # of Unprotected Sex Acts and Borderline Personality Style 86

Predictor Variable Distributions
Table A12. Skew and Kurtosis of Predictor and Criterion Variables 87
Table A13. Predictor Variable Ranges and Prototypical Item Response Distribution 87
CHAPTER 1

Introduction and Review of the Literature

Introduction

In developed societies, adolescence is viewed as a period of rapid physical and mental growth and development. However, this life stage may present a health paradox. While incredible advances are realized during adolescence, the transition into adulthood is also accompanied by a significant increase in morbidity and mortality rates (Dahl, 2004). Perhaps this explains why adolescence has also been described as a time of ‘storm and stress’ (Hall, 1904). In his review, Dahl (2004) indicates that the dramatic increase in morbidity and mortality is not attributable to illness or infection, but rather to “difficulties in the control of behavior and emotion” (p.3). The sensation seeking and reckless behavior seen among youth is thought to be responsible for the surge in accidents, suicide, drug abuse, violence, and sexual risk behavior notable during the period of adolescence.

Among the harmful and dangerous dysregulated behaviors that tend to increase during the period of adolescence, sexual risk behavior is one of the most clinically significant. For the purpose of this study, sexual risk behavior can be defined as including inconsistent or lack of condom use, and sexual relations with multiple partners. Sexual risk has been linked to a variety of adverse life outcomes with potential long term consequences, such as unplanned pregnancy, fertility-affecting STDs, and HIV infection (Kotchick, Shaffer, & Forehand, 2001). Many individuals who develop symptomatic AIDS were infected with HIV as adolescents or as young adults (U.S. National Institute of Allergy and Infectious Diseases, 2007). While adolescents, in general, are at increased
risk for sexually transmitted diseases (CDC, 2008), research indicates that those with mental health problems (Barthlow, Horan, DiClemente, & Lanier, 1995; Bryan & Stallings, 2002), those specifically with substance abuse problems (Deas-Nesmith, Brady, White, & Campbell, 1999), and those involved in the juvenile justice system (Dembo, Balenko, Childs, Wareham, & Schmeidler, 2009; Teplin, Elkington, McClelland, Abram, Mericle, & Washburn, 2005; DiClemente, 1991; Brown, Tolou-Shams & Whiteley, 2008) are at disproportionately increased risk. Moreover, the combination of substance use and delinquency increases the risk of engagement in risky sexual behaviors (Rowe, Wang, Greenbaum, & Liddle, 2008).

In comparison to their peers, adolescents involved in the criminal justice system initiate sexual intercourse earlier, have higher pregnancy and STD rates, practice safe sex less often, possess less knowledge about HIV, perceive themselves as less vulnerable with respect to contracting HIV, have lower self-efficacy to prevent HIV infection, and have more negative attitudes related to safer-sex practices (Gillmore, Morrison, Lowery, & Baker, 1994; Bryan & Stallings, 2002; Malow, McMahon, Cremer, Lewis, & Alferi, 1997).

Substance use adds another layer of risk, as use of alcohol and other drugs is commonly known to be linked to reduced inhibition and poor judgment. Studies have found that between 50%-62% of juvenile delinquents meet diagnostic criteria for a substance use disorder (Teplin et al., 2002; Aarons, Brown, Hough, Garland, & Wood, 2001), and 20% meet diagnostic criteria for both alcohol and other drug use disorders (Teplin et al., 2002). Adolescent substance users have been found to engage in unsafe sex

In an effort to understand, prevent, and reduce HIV and other STD infections among at-risk groups, a number of models have examined the proximal and distal determinants of sexual risk behavior, some of which have garnered empirical support (see Review by Fisher & Fisher, 2000). Most of the models used to understand risk have been based on cognitive behavioral aspects of HIV risk behavior, such as knowledge, attitudes, motivation, perceptions, and skills. A number of HIV prevention interventions have been designed based on these models. However, these interventions have demonstrated limited effectiveness in behavioral change (Kim, Stanton, Li, Dickersin, & Galbraith, 1997; St. Lawrence, Crosby, Belcher, Yazdani, & Brasfield, 1999), especially for those at highest risk (McMahon, Malow, Jennings, & Gomez, 2001; Eldridge St. Lawrence, Little, & Shelby, 1997; Diamond, McMahon, Malow, & Devieux, 2007). A recent review article by Tolou-Shams, Stewart, Fasciano, and Brown (2009) examined the effectiveness of HIV prevention interventions among juvenile offenders. The authors reviewed findings from 16 studies with a total of 3700 participants; overall, their findings point to a modest reduction in sexual risk behavior post-intervention.

The question of why these interventions are relatively ineffective must be addressed. One explanation for their modest success may be that interventions such as these require openness to new learning and a motivation toward safety. Moreover, change as a result of these interventions is based on the idea that the individuals undergoing the intervention(s) are receptive, willing and flexible enough to learn and change. For many individuals in substance abuse treatment, receptiveness, willingness and flexibility may
be limited. Interestingly, among adults, only 15% of individuals in the correctional system meet diagnostic criteria for an Axis I disorder. However, an estimated 75% meet criteria for a personality disorder (Stoner, 2008). Rigid or dysfunctional personality styles may interfere with the behavioral changes these interventions are attempting to achieve.

One promising approach involves using models of personality and psychopathology as a basis for understanding risk behavior. Personality theory may help to identify stable individual differences among adolescents and adults in self-image, social cognition, interpersonal behavior, coping mechanisms, and mood features that address fundamental motivational underpinnings of interpersonal behavior. This type of person-centered perspective may provide a basis for appreciating why some people tend to engage in distinct patterns of risky behavior and demonstrate resistance to change. Millon’s (1990) biosocial learning theory of personality and psychopathology provides an integrative and interactional perspective of the person, which may foster additional understanding of the determinants of HIV risk.

Relatively few studies have examined the relationships between maladaptive personality styles and HIV risk behavior. Even fewer have examined these relationships among adolescents, and there is a paucity of research dealing with at-risk adolescent groups (i.e., substance abusers, criminal offenders). HIV infection is on the rise among such vulnerable groups (Moone, 1997a, 1997b) and given the limited effectiveness of currently existing interventions, further research into variables that may influence degree of risk is needed in order to guide our intervention efforts moving forward. It is particularly relevant to consider the predictive potency of personality factors in the context of a typical HIV intervention study which is designed to influence risk outcomes.
The purpose of this study was to investigate the relationship between four theory-based (Millon, 1990) maladaptive personality styles and HIV risk behavior among at-risk adolescents. The styles hypothesized to have relevance to HIV risk behavior involve adolescent features of antisocial, dependent, avoidant, and borderline personalities. The linkages between personality styles and HIV risk behavior at two time points, among a group of adolescents undergoing court-mandated substance abuse treatment in conjunction with an HIV prevention intervention, were examined.

The present literature review provides a summary of 1) models currently used in the conception of the structure and determinants of HIV risk behavior, 2) the usefulness and limitations of these models 3) a theory of personality and psychopathology that may enrich our understanding HIV risk behavior, 4) a description of four personality styles relevant to HIV risk behavior, and 5) the hypothesized relationships between each of these styles and HIV risk behavior. Following the review, the study purpose will be outlined and the study hypotheses will be listed.

Review of the Literature

Understanding the Structure and Determinants of Risk

A review by Fisher & Fisher (2000), describes various models, each with a unique perspective on the proximal and distal determinants of risk. Several of these models, including the Health Belief Model (Rosenstock, 1966), the AIDS Risk Reduction Model (Catania, Kegeles, & Coates, 1990), and the Information-Motivation-Behavioral Skills model (Fisher & Fisher, 1992), have been studied and used in the development of HIV prevention interventions.
The Health Belief Model (HBM; Rosenstock, 1966) asserts that risky behavior is moderated by both the perceived susceptibility to a health threat, and the perceived severity of the consequences of a becoming infected with a condition that threatens one’s health. The combination of perceived susceptibility and severity lead to a general perceived vulnerability. According to the HBM, it is this perceived vulnerability which determines the actions of the individual. A cost-benefit analysis about taking any health action is then considered, and observed behavior is due to a perceived favorable cost-benefit ratio.

The AIDS Risk Reduction Model (Catania et al., 1990) incorporates ideas from the HBM and other models (i.e. self-efficacy theory), and purports that in order to reduce HIV risk, an individual must move through several stages: 1) labeling, 2) commitment, and 3) enactment. The individual must first label his/her behavior as problematic or risky, then s/he must make a commitment to increase safer behavior and reduce risky behavior, and finally s/he must enact strategies to realize the above goals. Commitment to change is a decision making phase, and decisions result from a cost-benefit analysis. According to this model, the cost-benefit analysis and subsequent action is affected by response efficacy, self-efficacy, as well as informational and social normative factors.

A third key model, the Information-Motivation-Behavioral Skills Model (Fisher & Fisher, 1992), purports that three elements comprise the central determinants of risk behavior: 1) information relevant to HIV risk, prevention, and transmission, 2) motivation, both personal and social, to engage in safer sexual and HIV preventive action, and 3) behavioral skills for engaging in HIV preventive action, including objective skills and a sense of self-efficacy for enacting those skills and behaviors. The
combination of these three central aspects is assumed to determine the extent to which an individual will carry out HIV preventive behavior. The IMB model is frequently used in intervention work, and involves a three-step process to reduce HIV risk behavior and increase preventive behavior. First, research is conducted to determine the intervention group’s likely deficits and assets in the three central components of the model. Second, targeted interventions are designed, based on the research conducted, to address the group’s deficits and take advantage of the group’s strengths in HIV prevention information, motivation, and behavioral skills. Lastly, an evaluation is conducted to determine the effects of the intervention on information, motivation and behavioral skills.

These models and their resulting approaches to intervention center on behavioral, cognitive-behavioral, and situational variables. Models such as these have been applied in various groups to target HIV risk behavior. In studies of substance abusing samples, these types of interventions have yielded inconsistent evidence related to the extent of reductions in sexual risk behaviors (Gibson, McCusker, & Chesney, 1998; Booth & Watters, 1994). Interestingly, a number of studies examining the effectiveness of HIV prevention interventions found that both experimental and control group intervention conditions were associated with improvements in a number of areas related to HIV risk, however, failed to find intervention-linked effects (Devieux, McMahon, Rosenberg, & Malow, 2007; Brown & Beschner, 1993). Review articles relating to HIV prevention interventions in North America (Tolou-Sham et al., 2009; Shoveller & Pietersma, 2002) concluded that modest gains in the area of sexual risk behavior can be realized from participation in these types of interventions. Small effect sizes found among high risk groups may be attributable to the additional obstacles to treatment that arise when
working with these groups, such as comorbidity, poor treatment retention and attendance (Coyle et al., 2006). Relevant to the current study, dysfunctional personality factors prevalent in high risk groups may limit treatment response.

Not only are there modest gains in HIV risk behavior post-intervention, but the treatment linked gains are lost over time (Jemmott & Jemmott, 2000; Rotheram-Borus, 2000; Rotheram-Borus, O'Keefe, Kracker, & Foo, 2000; DiClemente, Salazar, & Crosby, 2007). The small and short-lived effects of these interventions may be attributable to the fact that the models upon which these interventions are based are, in some ways, missing the mark, or are failing to address key variables that relate to HIV risk (Malow, Rosenberg, Donenberg, & Devieux, 2006; Masterman & Kelly, 2003). It is possible that important elements of risk behavior are being overlooked—elements that may limit treatment effects.

Moos (2002) provides another angle from which to consider the relatively weak effect sizes of intervention. Moos’ (2002) model suggests that intervention or treatment is simply one part of the complex contextual world of an individual. Furthermore, an intervention is a brief, time-limited experience, or what Moos refers to as a *transitory condition*. A transitory condition may provide an individual with new information, knowledge, learning and opportunities for growth or decay. However, it is a microcontext within the individual’s larger context of enduring environmental and personal factors. The matrix of personal, environmental and transitory conditions together influence individuals’ cognitive appraisals, coping skills, and ultimately, their health and wellbeing. According to Moos (2002), the personal and environmental systems carry more weight and tend to overshadow transitory “treatment” conditions.
If the experience of a prevention intervention can be considered a transitory condition, it can then be argued that this intervention is but one of many contextual variables that are operating on the individual’s behavior. Other, ongoing systems, such as the environmental and the personal, can serve to either reinforce or quell the influence intervention. Based on Moos’ (2002) model, the modest, short term effects of an intervention are, in some ways expected, given the influential and enduring nature of the environmental and personal systems. Perhaps the relative lack of success of these interventions is due to the fact that they fail to take into account characterological variables. Personality traits can be seen as part of the personal contextual system, and may influence intervention response. Persistent maladaptive personality traits may limit the effects of intervention.

To illustrate the way that personality style may hinder intervention, consider individuals with antisocial personality (antisocials). These types are known to follow deviant peer norms, to disregard consequences of their actions, and to work through conflicts with aggression rather than negotiation. These entrenched traits may prove to be insurmountable obstacles in the effort to change the HIV risk behaviors of antisocial individuals. Given their espousal to deviant norms, antisocials may lack the motivation to change their behaviors. Their disregard for negative consequences may result in intervention efforts falling on deaf ears, as these types may not perceive themselves as susceptible and may not care about the possible vulnerability of their partners. Finally, their aggressive style may pose a problem in attempting to teach safe sex negotiation and to commit to preventative behavior. This example illustrates how the very essence of the intervention recipient’s character may provide an explanation for the limited
effectiveness of the intervention. Therefore, though the previously-mentioned models are helpful in the quest to understand risk behavior, they do not account for characterological variables. The lack of character-based variables in these models may be a blind spot in gaining a complete picture of the determinants of sexual risk behavior.

**Personality, Millon’s Biosocial Learning Theory, and Adolescents**

It is important to define some key terms used frequently in this study. First, *personality* can be defined as the pattern of collective character, behavioral, temperamental, emotional, and mental traits of a person that are deeply unconscious and displayed automatically across all areas of psychological functioning (Millon & Davis, 1996). According to Millon (1990), personality is analogous to the immune system. The structure of an individual’s personality determines the individual’s propensity toward mental health and mental illness. Personality provides information about an individual’s ability to cope with environment demands, and also determines the type of symptoms that will likely develop if a stressor overwhelms the system’s defenses. A second term, *psychopathology*, can be defined as “the study of the origin, development, and manifestations of mental or behavioral disorders” (Pickett et al., 2000, p.1415). In Millon’s (1990) view, Axis I psychopathology can be understood as the set of symptoms that develop in the context of the environmental/psychosocial stressors and the personality system.

Millon’s (1990) theory purports that personality characteristics develop as a result of the interaction between biological predispositions and social learning experiences. Millon (1990) considers the expression of personality on behavioral, phenomenological, intrapsychic, interpersonal and biophysical levels. Personality
encompasses perceptions of self and others, regulatory mechanisms, feelings, thoughts, and behaviors, which together determine how the individual interacts with his/her environment and relates to him/herself. According to Millon, personality and its disorders can be categorized according to three polarities of functioning: 1) Pain-Pleasure (aims of existence: Preservation/Enhancement); 2) Active-Passive (modes of adaptation: Modification/Accommodation); and 3) Self-Other (strategies of replication: Individuation/Nurturance). In order to survive, an individual must first attempt to circumvent harm (pain), and seek life-enhancing experiences (pleasure). Individuals must then adapt to their environment, and may either modify the environment in order to meet personal needs (active) or accommodate to the current environmental conditions (passive). Finally, given limited resources, individuals must decide on where to invest their life’s efforts, whether in the pursuit of personal goals (self), or in the creation and enhancement of future generations or social change (other). It is Millon’s (1990) view that the particular goals and motivations of an individual can be understood in the context of where the individual falls along these polarities. Balance and flexibility among the polarities indicates healthy adaptation, while imbalance, conflict, rigidity, or deficiency in one or more of the polarities is indicative of pathology.

As McMahon (1993) notes, both normal and dysfunctional personality styles are assumed to be derived from the same developmental influences. Differences in the strength, timing, and tone of these influences result in the development of pathological versus adaptive traits. Normal personalities are capable of flexible coping and goal attainment; they are relatively unburdened by dysfunctional thoughts, defense mechanisms, and problematic behaviors which serve to perpetuate and intensify
preexisting difficulties. Normal personalities demonstrate stability and resilience in the face of life stressors. In contrast, pathological personalities have underdeveloped coping strategies, which they tend to apply rigidly. They struggle with distorted cognitions, defense mechanisms, and maladaptive behaviors which lead to the maintenance and escalation of their problems, perpetuate and intensify ongoing difficulties, and interfere with new learning. Pathological personalities lack hardiness, and demonstrate fragility in stressful situations. Old conflicts are easily reactivated, leading to a cycle of continuous challenges and difficulties (Millon, 1985; Millon & Davis, 1996). Millon has developed a series of inventories designed to gauge the personality, manifest behavioral problems, and symptom syndrome features articulated in his theory of personality and psychopathology.

Some researchers have argued that personality and its disorders cannot be studied among adolescents, as firstly, young people’s personalities have yet to fully develop, and secondly, given their incomplete development, personality among youth cannot be seen as disordered, rigid, or pathological. This argument has led to notable scarcity of research exploring personality styles among youth, especially in relationship to risk behavior. Though the DSM-IV cautions against making personality disorder (PD) diagnoses in adolescence, Westen & Chang (2000) note that this warning may be based on a paucity of data available on personality pathology within adolescents, as opposed to concrete findings pointing to the lack of personality pathology within this population or suggesting that PDs cannot be diagnosed during this developmental stage. In fact, evidence suggests that adolescents do possess a coherent, meaningful, and quite stable personality structure. Millon’s conception of maladaptive adolescent personality avoids labels such as
‘disordered,’ but recognizes that personality traits manifested in adulthood can be identified in adolescence (Millon, Millon, & Davis, 1993; McCann, 1999).

A number of studies have demonstrated that PDs can be diagnosed in adolescence, and also show substantial continuity over time (Bernstein, Cohen, Skodol, & Bezirganian, 1996; Johnson et al., 1999; Caspi, Moffitt, Newman, & Silva, 1998). The case for developmental continuity of individual differences in character has been reviewed by Clark (2005) and has been demonstrated in a number of longitudinal studies. Caspi & Silva (1995) assessed behavioral styles at age 3 and compared the initial behavioral styles to a self report of personality at age 18. They found that children who were described as undercontrolled, inhibited, confident, reserved, or well-adjusted at age 3, tended to score high on the same traits at age 18. Eisenberg et al. (1999) examined the stability of prosocial behavior including sharing, helping and offering comfort to others and followed the sample every two years from ages 4-5 to ages 23-24. This study found stability among those with prosocial dispositions. A 25-year, Scandinavian study found that compliance, self-control, and low aggression among 8-year-olds were linked to socialization and low aggression and impulsivity at age 33 (Laursen, Pulkkinen, & Adams, 2002). Another study by Pesonen, Raikkonen, Keskivaara, & Keltikangas-Jarvinen (2003) found developmental continuity in difficult temperament over 17 years, which translated to poor social adjustment in childhood and anger in adulthood. All of these findings lend support to the relevance of studying “personality” processes in childhood and adolescence.

The idea of developmental continuity also makes sense in light of the fact that a number of personality styles in adolescence have been found to be important precursors
to adult disorders. For instance, the relationship between conduct disorder (CD) and future antisocial personality disorder (ASPD) has been well documented. Approximately 40% of conduct disordered youth meet criteria for antisocial personality disorder in adulthood (Children’s Mental Health Ontario, 2001). Lahey, Loeber, Burke, & Applegate (2005) examined 177 outpatient boys aged 7-12, 75% of whom were diagnosed with conduct disorder, and 25% with another disorder. A strong association between CD in childhood and subsequent ASPD in young adulthood was found. In fact, the authors noted a linear relationship between the number of childhood CD symptoms and the future development of ASPD as a young adult. With each additional symptom of CD met in childhood, the odds of developing ASPD increased by 37%.

The evidence cited above has recently opened the door to more personality research with younger populations. However, in general, studies examining the relationship between personality styles and sexual risk behavior have been limited to adult samples. Very few studies have addressed the question of whether or how these relationships apply within adolescent populations. However, studies utilizing adult samples provide important clues and direction to inform adolescent research. Below, theory and empirical findings on the relationships between antisocial, dependent, avoidant, and borderline personalities and HIV risk behavior will be reviewed.

**The Antisocial Style**

The following is adapted from Millon & Davis’ (1996) description of the antisocial personality type. The self-image of antisocial types is fiercely autonomous; they seek to be self-sufficient and unconstrained by personal connections or
responsibility to others. They tend to disregard convention and view themselves as being ‘above the law.’ They believe they are victims of hostility and maltreatment, thereby justifying their aggressive and retaliatory posture. Antisocials view others as untrustworthy, cruel competitors, and the world as dangerous. They believe that others are harmful; therefore, they must protect themselves in whatever way they can.

Interpersonally, these types are both irresponsible and power-seeking. Their extreme independence is linked to a lack of trust in others, and a subsequent lack of loyalty. Relationships with others are approached for the purpose of personal gain. Their lack of compassion, hostility, dishonesty, deceit, and insidious disregard for others, results in a pervasive pattern of conflict in relationships. Their cognitive style is deviant, as they espouse to nonconformist beliefs and lack morals. With respect to mood, antisocial are described as being callous, insensitive and petulant, and as demonstrating angry aggression. These types are viewed as having difficulty with emotion regulation. Discharge of emotions is through antisocial acting out. In theory, this acting out occurs impulsively, without consideration of consequences, and without feelings of remorse. They are also considered intolerant of monotony, which leads these individuals to seek out novel, exciting, and risky situations in order to experience a thrill or a rush. They place value on strength and on the ability to endure and to fight. Much effort is expended toward being or appearing tough, and they may seek out dangerous situations in order to prove their courage. These individuals perpetually compete in a Darwinian, survival of the fittest manner (Millon & Davis, 1996).

Horney (1950), a theoretical predecessor to Millon, described this type of individual, one who moves against, similarly, and stated that this type is characterized by
an ‘emotional barrenness.’ According to Horney, antisocial personalities adapt to perceived mistreatment by exploiting others. Millon would concur, as his view of the antisocial is of a manipulative character, motivated by vengeance. Given the impulsive, irresponsible, unempathic, deviant, and merciless characteristics of the antisocial, as well as their coercive, interpersonally exploitative nature, it is understandable how this personality type provides an ideal breeding ground for engagement in risky sexual behavior.

Millon (1993) also describes this personality pattern among adolescents. Given that the personalities of youth are still developing, and may be more flexible than those of adults, Millon uses different language in labeling adolescent personalities. Therefore, instead of using the term antisocial, the term *unruly* is implemented (Millon, 1993). This change in terminology is intended to reflect milder, less severe variations of the same trait; or “intermediate levels of disturbance” (McCann, 1999, p.8) as opposed to pathology or disordered personality.

Therefore, although antisocial personality per se is not typically diagnosed among children and adolescents, antisocial or unruly traits are often the foci of clinical attention. This is evidenced by the high frequency of conduct disorder among adolescents. Prevalence rates of conduct disorder in clinical settings range from 33% to more than 66% (Kazdin, Siegel & Bass, 1990), while community lifetime estimates for CD are as high as 17% (APA, DSM-IV-TR, 2000). Conduct disorder is a necessary condition for the diagnosis of antisocial personality in adults, as the DSM-IV-TR (APA, 2000) specifies that the criteria of ASPD must have been evident since age 15 for the diagnosis to be considered valid. The onset of these antisocial or unruly traits is early, as can be the
onset of HIV risk behaviors. However, relatively few studies have examined links between antisociality and HIV risk behavior among adolescents.

Antisocial personality disorder (ASPD) has been defined as a pervasive pattern of impulsive behaviors and reckless disregard for self and others (APA, 2000)—characteristics that may reasonably be associated with HIV transmission. Understandably ASPD has received considerable attention from researchers studying HIV risk behavior. The link between antisociality and HIV risk behavior has been repeatedly demonstrated (Malow et al., 2007; Kelley & Petry, 2000; McMahon, Malow, & Penedo, 1998; McMahon, Malow, & Jennings, 2000; Compton et al., 2000; Ladd & Petry, 2003). Gill, Nolimal, and Crowley (1992) found that adults diagnosed with ASPD were more likely to report needle sharing, a greater number of needle sharing partners, recent injection drug use, earlier first sexual contacts, a greater number of sexual partners, and involvement in prostitution, as compared to those without ASPD. Compton et al. (1998) found ASPD was linked with having multiple sex partners, having sex while intoxicated, paying for sex, and trading drugs for sex. This trend for higher rates of HIV risk behaviors applied at both baseline and post-HIV risk reduction intervention at 18-month follow-up.

According to Singh & Ochitill (2006), certain personality structures are significantly more prevalent among HIV-positive individuals, with antisocial personality being one such structure. The DSM-IV lists poor social conformity, criminality, deceitfulness, irresponsibility, lack of remorse, and impulsivity as central characteristics of antisocial personality disorder (APA, 2000). Individuals with Antisocial Personality Disorder may be at increased risk for HIV and other STDs due to the fact that they may be both highly impulsive and also less harm-avoidant. High impulsivity has been linked
to increased risk behavior and higher rates of STDs (Donohew et al., 2000; Kahn, Kaplowitz, Goodman, & Emans, 2002; Malow, Devieux, Jennings, Lucenko, & Kalichman, 2001; Pack, Crosby, & St. Lawrence, 2001). Moreover, the combination of novelty-seeking and low fearfulness may result in increased risk behavior. These traits are argued to incite the antisocial individual to seek reward without consideration or thought of avoiding possible negative consequences. Therefore, behavior is considered to be based on immediate gratification, i.e. pleasurable sexual activity. This is especially true among antisocial individuals who have comorbid substance abuse diagnoses (Petry, 2002). In addition, antisocial individuals exhibiting callous-unemotional traits (Frick & White, 2008) are deficient in the areas of empathy, cooperativeness, and interpersonal focus. These deficits related to regard for others could reasonably lead to unsafe sexual practices and increased risk of HIV transmission.

Another reason that individuals with antisocial personality tend to be at increased risk involves underlying deficits in cognition and emotion evident among this group. For instance, feeble self-control, poor behavioral regulation, and bad decision-making may facilitate and maintain patterns of risk behavior (Ladd & Petry, 2003). Comorbidity (ASPD and AOD diagnoses) may also lead to increased HIV risk behaviors among antisocial substance abusers (Compton, et al., 2000). There may be a compounding effect of the behaviors associated with these two disorders. Tendencies toward sensation-seeking, impulsivity and lack of regard for consequences may be reinforced and exaggerated with the introduction of substances. Compton et al. (2000) found that drug abusing individuals with ASPD demonstrated elevated levels of HIV risk behavior both before and after HIV-TRR, and did not benefit less from HIV-TRR than those without
ASPD. King, Kidorf, Stoller, & Brooner (2000) found that adult treatment-seeking substance abusers presenting with any comorbid psychiatric disorder demonstrated more high-risk sexual behavior as compared to those without comorbidities. However, the comorbid individuals’ rates of HIV risk behavior did not decrease following treatment.

McMahon et al. (2000) studied linkages between maladaptive personality characteristics measured by the MCMI-II and HIV risk behaviors among polysubstance abusers. Participants were male veterans who met DSM-III-R criteria for drug dependence and who participated in a 6-week VA-based therapeutic community drug dependence treatment program that included an HIV prevention intervention. Associations between antisocial personality and other personality dimensions (outlined later in this review) and high-risk sexual practices among substance abusers in treatment were hypothesized.

Sequential multiple regression analysis was used to determine if personality dimensions improved prediction of 12-month follow-up percentage of unprotected sex among drug treatment completers after controlling for important covariates including pretreatment percentage of unprotected sex and both pretreatment and 12-month follow-up substance abuse levels. Results revealed a significant bivariate relationship between antisocial personality and unprotected sex prior to intake, but not during follow-up. McMahon et al. (2000) note:

The failure to find stronger and more consistent associations may be related to the very high scores on the antisocial personality scale earned by the majority in this sample (…). Perhaps there was insufficient variability on this dimension to allow for an adequate test of [their] hypothesis (p.408).

Another study by Martinez (2004) examined linkages between maladaptive personality characteristics measured by the MCMI-III and HIV risk behaviors among
psychiatric patients in Miami. Participants (n=272) were recruited from outpatient and residential treatment centers in the Miami area, and were randomly assigned to one of two HIV prevention interventions. Associations between antisocial personality and other personality dimensions and high-risk sexual practices among psychiatric patients in treatment were hypothesized. Specifically, level of antisocial personality was hypothesized to be associated with greater number of sexual partners and with more unprotected sex acts at 12-month follow-up.

Hierarchical multiple regression analysis was used to determine if personality dimensions improved prediction of 12-month follow-up percentage of unprotected sex among drug treatment completers after controlling for important covariates including demographic variables, intervention type, the baseline values of the outcome measures, and AOD abuse levels. Results revealed an association between level of antisocial personality and number of unprotected sex acts at follow-up after controlling for covariates. However, this study failed to find an association between level of antisocial personality and number of sex partners.

Haro, Mateu, Martinez-Raga, Valderrama, Castellano, & Cervera (2004) examined the relationship between personality disorder and HIV risk behaviors among comorbid drug users. Their sample consisted of 74 patients (mean age 31.3 years) who all met DSM-IV criteria for opiate abuse or dependence, and were admitted to a hospital in Spain for opiate detoxification. The sample was followed up at 3 and 6-months post-detoxification. Of the 74 patients, 45 were men and 29 were women. Most patients were single, had basic education, and were unemployed. Authors reported no significant differences in demographics between study completers and dropouts. Substance and
sexual risk behavior were assessed using a self report based on the Risk for HIV Behavior questionnaire. Axis II psychopathology was assessed using the International Personality Disorder Examination (IPDE). All measures except the IPDE were readministered at 3 and 6-months follow up.

Over 58% of the sample met diagnostic criteria for at least one PD. The most prevalent PD was Borderline PD (23%), followed by Paranoid PD (14.9%). Nearly 85% of subjects had at least one SUD in addition to opiate abuse or dependence. At intake, almost 81% of patients reported HIV risk related behaviors in the last 6 months. The most frequent risk behaviors reported were unprotected sex acts and multiple partners. Of the 74 subjects, 44 were available for 3-month follow up and 40 completed a 6-month follow up. In examining group x time effects at 3-month follow up, Antisocial PD was the only PD significantly linked to substance use and HIV risk behavior outcomes. Subjects with Antisocial PD showed a higher rate of relapse to opiate use at 3 month follow up. They also demonstrated an increase in condom use at 3-month follow up, however interestingly, associations between ASPD and substance or sexual risk behaviors at 6 month follow-up were not found. There were no associations between outcome variables and any other PDs. The increase in condom use finding is contrary to the findings in many studies (Kelley & Petry, 2000; Tourian et al., 1997) that associate ASPD with increased HIV risk behavior. This finding may be due to the limited follow-up data available as 41% of the sample did not participate in the 3-month follow up, and 46% did not participate in the 6-month follow-up. It is possible that non-completers had worse outcomes.
Other studies, examining psychopathology clusters, have found that antisocial individuals without severe co-morbid psychopathology demonstrate less risk behavior as compared to those with antisociality combined with additional indicators of comorbid psychopathology (McMahon, 2008; McMahon, Malow & Penedo, 1998). This suggests that antisocial personality may not be the central feature related to increased risk behavior.

While the majority of studies identify a significant relationship between antisocial personality and risk behavior among adults, the failure of some studies to find a relationship between antisociality and risk behavior cannot be ignored. For instance, Abbott et al. (1994) found no association between an ASPD SCID-II diagnosis and HIV risk scores from the Risk Assessment Battery (RAB). Compton (2000) failed to find differences in safe sexual practices among injection drug users based on the presence or absence of ASPD. Tourian et al. (1997) suggested that the diagnosis of ASPD may not fully capture the features that contribute to risky behavior and is complicated by the inclusion of antisocial behaviors that may be associated with drug use. Further, they found that sexual risk behavior was predicted more consistently by measures of antisociality, i.e. PCL-R and CPI-So, than by a diagnosis of ASPD itself. McMahon et al. (2000) demonstrated a relationship between antisocial traits and HIV risk at one time point, yet failed to find this relationship at multiple time points. Although Haro et al. (2004) found a relationship between antisocial personality disorder and increased drug use, antisocial personality disorder was also counter-intuitively linked to increased condom use over time. The varied findings of studies examining the relationship between antisocial personality and HIV risk may depend on population characteristics, variations
in the conceptualization and measurement of antisocial personality, variations in
definitions and measurement of risk behavior, comorbidity with substance abuse as well
as other psychiatric conditions, control variables included in analyses, and more.

Given the varied findings, more remains to be learned about the specific
components of antisociality that contribute to risk behavior, and about the population
characteristics, comorbidities, and possible control variables that may influence the
emergence of such relationships. Clark (2005) has argued that perhaps another factor,
psychiatric severity, is at play, influencing outcome. This same suggestion can be gleaned
from the McMahon et al. (2000) study. The lack of clarity on the relationship between
antisociality and HIV risk behavior may be due to the presence of other variables,
including co-occurring personality disorder features. Antisocial personality may be one
personality style among others that predicts risk behavior, or may predict risk behavior
when accompanied by other styles. The presence of other dimensions of personality and
psychopathology may contribute meaningfully to the prediction of patterns of HIV risk
behavior. Other personality styles relevant to risk will be reviewed below, beginning with
the dependent style.

The Dependent Style

The following is adapted from Millon & Davis’ (1996) description of the
dependent personality type. Dependents are viewed as having an inept self-image;
viewing themselves as fragile, weak, incompetent and powerless. They view others as
superior, more skillful and more capable. They have a childlike worldview, which can be
described as immature. Interpersonally, dependents rely heavily on others for support,
affection, approval and guidance. They relinquish responsibility for themselves to others.
They place great importance on pleasing others and being well-liked, as they have a strong need for intimacy and belonging. Always seeking approval and acceptance, they submissively yield to others. They are passive, tolerant and warm. Deep fears of rejection, conflict and abandonment lead this type to be over-compliant and obsequious. They will deny problems in and conflicts within close relationships in order to maintain their sense of security. Cognitively, the dependent is naïve, trusting and gullible, easily convinced, unquestioning, and seldom disagreeing. The dependent’s mood is pacific, characterized by warmth, lack of competition, and avoidance of conflict. When rejected, however, dependents feel deep pessimism, insecurity, and desperation. In order to cope with their anxious feelings of ineffectiveness, they cling to others who they view as more competent, creating “illusions of shared competence” (Millon & Davis, 1996, p. 333). Additionally, denial plays a role in dependents’ coping. Difficult or troubling situations are minimized, feelings of hostility are forbidden as they may threaten the relationships upon which they so firmly rely (Millon & Davis, 1996).

Horney (1950) described this type of individual, one who moves toward others, as having deficiencies in the areas of assertion and ambition, with difficulties in appearing demanding or critical. Horney emphasized the importance of love and sex in the world of moving toward individuals; love may be the only goal worth pursuing, and sex provides evidence of being wanted. Both love and sex may be overvalued and assumed to have the power to solve all.

Millon (1993) describes the dependent personality pattern among adolescents, using the term submissive. As with the use of the term unruly to represent an adolescent variation of the label antisocial, this change in terminology is intended to reflect milder,
less mature or less crystallized variants of the adult forms of these styles (McCann, 1999).

Dependent or submissive types may be at increased risk for HIV due to their acquiescent interpersonal orientation, and their tendency to rely on others for feelings of self-worth and adequacy (McMahon, Malow, & Jennings, 2000). The excessively approval-seeking dependent may be unable to engage in sufficient self-assertion to enact the preventative steps necessary for safe sex. Moreover, their deep fear of rejection may place the dependent individual at increased risk for HIV transmission. In effort to avoid conflict, they may behave compliantly, or even obediently, in order to preserve relationships, and may acquiesce to the possibly dangerous desires and demands of their typically more assertive partners. Dependent types do not usually demonstrate traits of competence, responsibility and initiative needed to carry out safe sex practices. Their naïveté and trusting nature may be another factor that increases their risk, as dependents may not question their partners and may comply, having confidence in their partners’ ability to make smart choices. Finally, vulnerability to negative peer influences has been argued to be particularly prominent among adolescents. Even more than in adulthood, adolescence may be a period during which dependent personality characteristics may be particularly salient contributors to risk behavior.

Only two studies were identified that have investigated the relationship between dependent personality and HIV risk behavior. The study by McMahon, Malow, & Jennings (2000) cited earlier examined linkages between dependent personality dimensions and high-risk sexual practices among substance abusers in treatment. Sequential multiple regression analysis was used to determine if dependent personality
improved prediction of percentage of unprotected sex at 12-month follow-up, among drug treatment completers, after controlling for important covariates including pretreatment percentage of unprotected sex and both pretreatment and 12-month follow-up substance abuse levels. Results of this study revealed that higher levels of dependent personality were associated with more unprotected sex at follow-up.

Martinez’s (2004) study, also discussed earlier, examined baseline and follow-up data from a sample of psychiatric patients (n=272), and investigated the relationships between dependent personality pathology and HIV risk behavior. A significant relationship between level of dependent personality style and number of unprotected sex acts was hypothesized, but was not detected in regression analysis.

There is very limited data available to help us to elucidate the relationship between dependent personality style and HIV risk behavior. The two studies reviewed reveal contrasting findings; one revealing that level of dependent personality style was linked to number of unprotected sex acts at follow-up, and the other study failing to find this relationship. Moreover, both of these studies were carried out on adult samples. The inconsistency of these findings may be a result of differences between the two studies in sample characteristics and other methodology. Given the potential vulnerability associated with dependent personality, research on linkages between this style and HIV risk behavior among adolescents is warranted.

The Avoidant Style

The following is adapted from Millon & Davis’ (1996) description of the avoidant personality type. The avoidant’s self-image can best be described as alienated. They see themselves as inferior, socially incompetent, and struggle with low self worth. Others are
seen as critical and likely to be rejecting. The world is viewed as an unkind place. Interpersonally, individuals with avoidant personality (avoidants) are ambivalent. They withdraw from social situations, as fear of rejection overrides their strong desire for closeness, resulting in seclusion for self-protection purposes. Cognitively, avoidants are hyper-alert to potential threats in their environment, overanalyzing even the smallest word or nonverbal gesture. They are distracted by an endless stream of self-deprecating, negative thoughts resulting from the analysis of their environment. Relating to mood, avoidants experience a great deal of negative affect, including anxiety, sadness and anger. In order to cope with their intense negative affect, avoidants often retreat into fantasy to cope, imagining themselves involved in positive interpersonal interactions. However, this coping strategy often leads to more distress as the avoidant finds him/herself facing the great discrepancy between fantasy and reality (Millon & Davis, 1996). Among adolescents, Millon (1993) uses the term inhibited in order to describe the avoidant personality pattern. Again, this change in terminology is intentional, with the aim of reflecting a milder version of this trait as compared to the adult variant (McCann, 1999).

Prototypical avoidants are characterized by pervasive interpersonal avoidance. With limited social contacts, avoidant types have few opportunities to develop relationships. However, avoidants reporting sexual activity may be at increased risk given their limited interpersonal coping skills (McMahon, Malow, & Jennings, 2000). Limited interpersonal problem solving skills present a barrier which may prevent the avoidant type from successfully negotiating safer sex practices. Moreover, deep need for acceptance and love may lead the avoidant type to engage in unsafe sexual activity—choosing approval over self-protection.
Only two studies have investigated the relationship between avoidant personality and HIV risk behavior. The previously cited study by McMahon et al. (2000) examined linkages between avoidant personality dimensions and high-risk sexual practices among substance abusers in treatment. Sequential multiple regression analysis was used to determine if avoidant personality improved prediction of 12-month follow-up percentage of unprotected sex among drug treatment completers after controlling for important covariates including pretreatment percentage of unprotected sex and both pretreatment and 12-month follow-up substance abuse levels. Results of this study revealed that individuals with significant avoidant personality features revealed lower risk levels associated with limited sexual involvement during follow-up. However, no association was found between level of this personality style and level of risk behavior among those who reported sexual activity.

Martinez (2004) examined baseline and follow-up data from a sample of psychiatric patients (n=272), and investigated the relationships between avoidant personality and HIV risk behavior. The author hypothesized that avoidant personality would be associated with fewer sexual partners at 12-month follow-up, and also with more unprotected sex acts among those who were sexually active during the same period. Regression analyses revealed no relationship between level of avoidant personality style and number of partners at intake or follow-up. Further, no relationship was found between level of avoidant personality style and unprotected sex among sexually active participants.

Differences in the findings of these two studies may be attributable to differences in sample characteristics (i.e. SMI patients vs. AOD abusers), and differences in control
variables used in analyses (i.e. controlling for pre-treatment levels of substance abuse and sexual risk behavior vs. not controlling for such variables). Empirical evidence regarding the association between avoidant personality and HIV risk behavior is limited to adult clinical samples. No studies of were identified that examined such relationships among adolescents.

The final personality style that will be examined—the borderline style—is deserving of more attention. In spite of the plethora of research that has emerged with respect to the borderline style and its clinical correlates, few studies have addressed the borderline style and its relationship to HIV risk behavior, and even fewer have examined these relationships among adolescents.

*The Borderline Personality*

According to Millon & Davis’ (1996) the borderline type is characterized by an uncertain self-image, resulting in a confused self-concept. Presentations of self shift quickly and frequently, often in contradictory ways. Their view of others is also inconsistent and rapidly changing. Interpersonally, they are ambivalent. They vacillate between extremes of idealization and devaluation of others. Borderline types desire attention and affection, yet they are unpredictably opposing, manipulative, and explosive, thereby eliciting rejection. Millon & Davis (1996) assert that the borderlines’ deep fears of desertion and abandonment lead to impulsive outbursts, resulting in the creation of that which they fear most—a self-fulfilling prophecy. The cognitions and perceptions of borderlines are rapidly changing and unpredictable. At worst, they may deteriorate and experience paranoid and delusional thought processes. Their moods are labile and dysregulated; affective experience is intense and shifting. Extreme highs and lows are
encountered periodically. In order to cope with the pervasive inconsistency, instability and resulting feelings of emptiness, borderlines may regress to developmentally earlier levels of adaptation. Additionally, negative feelings towards others are either conveyed in an angry outburst toward a safe scapegoat, or alternatively, turned inward, resulting in self-blame and possibly self-injurious or parasuicidal behavior (Millon & Davis, 1996).

Horney (1945) identified an *elusive* type which resembles our current conception of the borderline personality. These individuals are impossible to pin down. They are cruel one moment, kind the next; at times selfless, then cold and careless with others; overbearing in some respects, unassuming in others (Horney, 1945). They shift suddenly between dominant and submissive orientations. After wronging someone, they will be overly apologetic, only to unexpectedly return to an abusive stance. The “elusive” is an individual who has failed to repress parts of his/her conflict and has not managed to establish an idealized image. According to Horney (1945), the elusive neurotic would likely be described as attempting to reconcile unstable and contradictory images of self and others, contradictory interpersonal behaviors, as well as vacillating and anguished emotional reactions.

Among adolescents, Millon (1993) uses the term *Borderline Tendency* in order to describe the borderline personality pattern. This language change is used in order to express the tentative and flexible nature of personality among youth. The addition of the term *tendency* implies an inclination or a leaning, but not an absolute; thereby noting the possibility of continued growth and change.

Linehan (1993) suggests that borderline types are highly stress-reactive and also take longer to recover once the stressful episode has passed. In general, their emotional
experience is both labile and extreme – vacillating unpredictably between euphoric and dysphoric states. Therefore, this pattern is also seen with respect to positive emotional experience. Furthermore, Linehan (1993) argues that borderlines were raised in environments in which their beliefs about themselves and their environment were continually devalued and invalidated. As a result, they developed into adults who are uncertain of the truth of their own feelings.

Borderline types may be at risk for HIV transmission for a number of reasons. This personality type is characterized by emotional dysregulation, impulsivity, self-destructive tendencies, and lack of a clear sense of self. Difficulty in regulating emotions may lead them to risky behaviors (drug use, sexual promiscuity) for self-soothing/ self-medicating purposes (Khantzian, 1997). Similarly, borderlines may desperately reach out to others in attempt to alleviate their feelings of emptiness, and/or as a means to satisfy their need for recognition, validation, and affirmation of identity. Their impulsive nature and lack of forethought may result in increased likelihood of engaging in risky behavior. Moreover, they may experiment with risk behaviors due to their self-destructive tendencies, and/or in their search for identity. Clark (2005) suggests that the borderline type shares the impulsive trait with the antisocial type, yet the borderline also has strong negative affectivity. This high negative affectivity, coupled with the borderline’s difficulty with emotional regulation and propensity to act impulsively, may lead to increased HIV risk behavior.

Despite the attention that borderline personality disorder (BPD) has received from researchers, relatively little work has addressed the relationship between BPD and sexual risk behavior. A few studies have demonstrated a link between BPD status and HIV risk.
Jacobsberg, Frances, and Perry (1995) found that of the 18.6% of individuals in their sample found to be HIV positive, 37% met criteria for a personality disorder, as compared to 20% who tested negative. Moreover, those with borderline personality disorder had a statistically significant increased HIV infection rate as compared to others diagnosed with other personality disorders. Hull, Clarkin and Yeomans (1993) examined a group of 71 female psychiatric patients meeting criteria for BPD. In this study, 46% had entered into a sexual encounter impulsively, with a partner not well known to them, over the preceding 5 year period. Thirty-nine percent had entered into at least 3 impulsive sexual encounters over the preceding two year period.

A number of studies have not yielded the anticipated results in support of a positive relationship between borderline personality and HIV risk. Devieux, Malow, Rosenberg, Nair, Samuels, & McMahon (2009) investigated a group of incarcerated youth, a group from which the current study’s sample will be drawn. Three hundred and eighty one males and 141 females were included in the analysis. The mean age of the sample was 15.74 years (SD=1.23). The racial composition of the group was 35.1% African American, 36.4% Hispanic, 10.9% Non-Hispanic White, and 17.6% other, including Haitian and other Caribbean heritage. The 522 youth were divided into two groups, Low Borderline (scores below 60 as assessed by the MACI Borderline Tendency scale) and High Borderline (scores above 60 as assessed by the MACI Borderline Tendency scale).

MANCOVA analyses were implemented to test for between group differences in HIV related risk behavior and HIV related knowledge and attitudes. There were no differences among the groups in age, gender, or race. At intake, no significant differences
were found between the groups with respect to sexual risk behavior once covariates were included in the analysis. A subset of these youth (n=156) was followed-up at 3-months. Follow-up analyses revealed significant differences between the groups in cocaine use and anal sex, with the high borderline group demonstrating higher levels of both.

Martinez (2004) examined baseline and follow-up data from a sample of psychiatric patients (n=272), and investigated the relationships between borderline personality and HIV risk behavior. Level of borderline personality pathology was hypothesized to be associated with number of partners and number of unprotected sex acts. Regression analyses revealed that higher levels of borderline personality was associated with a greater number of sexual partners at 12-month follow-up, however, there was no relationship between level of borderline personality and number of unprotected sex acts. Surprisingly, no other studies were identified that have explored these constructs and more research needs to be conducted to further elucidate the borderline-HIV risk linkage.

There is a theoretical rationale for anticipating HIV risk patterns linked with the four theory-based personality styles outlined above; however, the empirical evidence is unclear and often scarce. In spite of the fact that adolescence is a developmental period characterized by increased risk behavior, adolescent studies on the determinants of risk, specifically personality determinants, are quite limited. Much remains to be learned about the nature of the relationship between personality style and HIV risk behavior among most vulnerable youth. Furthermore, these potentially important relationships have not been examined in the context of intervention studies designed to influence risk outcomes, in spite of the fact that at-risk youth are often the target of risk reduction interventions.
Greater understanding about the degree to which personality may influence HIV risk behavior may provide direction for enhancing existing HIV prevention intervention paradigms.

Study Purpose and Hypotheses

The purpose of this study was to examine relationships between four maladaptive personality styles and HIV risk behavior, among a group of adolescents undergoing court-mandated substance abuse treatment, who have taken part in a HIV prevention intervention. The aim of this study was to explore the following research questions: 1) Do levels of antisocial (unruly), dependent (submissive), avoidant (inhibited), and borderline (borderline tendency) personality styles predict extent of HIV risk behavior among substance abusing youth at baseline? 2) Do levels of antisocial (unruly), dependent (submissive), avoidant (inhibited), and borderline (borderline tendency) personality styles influence the degree of change in HIV risk behavior expected following AOD treatment that included an HIV prevention intervention?

The following hypotheses were tested in this investigation of at-risk adolescents:

Hypothesis 1: It was hypothesized that level of unruly personality style would be positively associated with number of sex partners at baseline.

Hypothesis 2: It was hypothesized that level of unruly personality style would be positively associated with number of sex partners at follow-up, controlling for baseline levels of the same variable.

Hypothesis 3: It was hypothesized that level of unruly personality style would be positively associated with percentage of sex acts unprotected, among those that were sexually active, at baseline.
**Hypothesis 4:** It was hypothesized that level of unruly personality style would be positively associated with percentage of sex acts unprotected at follow-up, among those that were sexually active, controlling for baseline levels of the same variable.

**Hypothesis 5:** It was hypothesized that level of submissive personality style would be positively associated with percentage of sex acts unprotected, among those that were sexually active, at baseline.

**Hypothesis 6:** It was hypothesized that level of submissive personality style would be positively associated with percentage of sex acts unprotected at follow-up, among those that were sexually active, controlling for baseline levels of the same variable.

**Hypothesis 7:** It was hypothesized that level of inhibited personality style would be negatively associated with number of sex partners at baseline.

**Hypothesis 8:** It was hypothesized that level of inhibited personality style would be positively associated with percentage of sex acts unprotected, among those who are sexually active, at baseline.

**Hypothesis 9:** It was hypothesized that level of inhibited personality style would be positively associated with percentage of sex acts unprotected at follow-up, among those that are sexually active, controlling for baseline levels of the same variable.

**Hypothesis 10:** It was hypothesized that level of borderline tendency personality style would be positively associated with number of sex partners at baseline.

**Hypothesis 11:** It was hypothesized that level of borderline tendency personality style would be positively associated with number of sex partners at follow-up, controlling for baseline levels of the same variable.
**Hypothesis 12:** It was hypothesized that level of borderline tendency personality style would be positively associated with percentage of sex acts unprotected, among those that were sexually active, at baseline.

**Hypothesis 13:** It was hypothesized that level of borderline tendency personality style would be positively associated with percentage of sex acts unprotected at follow-up, among those that were sexually active, controlling for baseline levels of the same variable.
CHAPTER 2

Methods

Data

This study involved a secondary analysis of data from a NIDA funded project entitled Risk Reduction in HIV+/HIV Drug Abusing Youth (1R01DA011875-01, R. Malow, PI). The original study examined a group of substance abusing adolescents in court-mandated substance abuse treatment. The central aim of the longitudinal 4-year study was to compare the effects of an Enhanced Cognitive-Behavioral Intervention (a modified version of Becoming a Responsible Team, M-BART) to an Anger Management (AM) treatment condition in reducing HIV risk among culturally diverse, minority adolescent substance abusers.

Recruitment

Recruitment occurred during the years 1998-2002 at a court-mandated drug treatment center in Miami-Dade County, FL. Participants were recruited during their first week of treatment. Parental consent for those under 18, and adolescent assent were obtained. Baseline assessments were initiated in private interview rooms. Inclusion criteria included: 1) being 13-19 years of age, 2) having a drug use history, 3) having English language fluency, and 4) having no serious cognitive or psychiatric disturbance (ex. schizophrenia) that could interfere with the ability to participate in assessment and/or intervention. Participants were not screened for personality disorder diagnoses as these were not considered psychiatric disturbances warranting exclusion. Participants were randomized to one of two treatment conditions: the M-BART experimental group and the AM control group; interventions will be described below. Approximately 97% of
participants completed at least 4 of the 6-session intervention (99% completed 4 of more sessions of the M-BART condition; 95% completed 4 or more sessions of the AM condition). At 3-month follow-up, 127 subjects completed the assessment.

Sample Characteristics

Of the 258 adolescent participants that agreed to take part in the study, 131 participants completed the 3-month follow-up interview. The present study used data from the intake assessments and the 3-month follow-up assessment. Participants who did not complete the follow-up assessment were excluded from this study. Moreover, an additional 4 participants were excluded from the sample due to outlier values. The final sample consisted of 127 participants whose characteristics are summarized in the Results section.

Intervention Procedures

Participants were randomized to one of two treatment conditions: A modified version of Becoming a Responsible Teen (BART; St. Lawrence et al., 1995), or an Anger Management (AM) control. All interventions were carried out in a small group format, consisting of 4-8 participants per group. Interventions were administered by male-female co-facilitators. Both conditions consisted of six one-hour sessions, provided over a 3 to 6 week period.

M-BART

The Becoming a Responsible Teen intervention (BART; St. Lawrence et al., 1995) is based on the information, motivation, and behavior change (IMB; Fisher & Fisher, 2000) model as well as social learning theory. A modified version of this intervention (M-BART) focused on helping participants to develop their own risk-
reduction strategies, based on what was most feasible for each individual, e.g., abstinence, safer sex negotiation, condom use. M-BART emphasized HIV education and HIV prevention skill building. Content of the sessions included HIV-related information, vulnerability to HIV, a discussion of safe sex attitudes, risks of HIV transmission, stereotypes about HIV transmission, condom use, condom use skills, assertiveness, communication skills, safe sex negotiation skills, barriers to safe sex, and the relationship between alcohol, drug use and HIV risk. M-BART has been included in the Program Archive on Sexuality, Health and Adolescence (PASHA), as one of the interventions that have been found to be effective in modifying sexual risk behaviors among youth (Card, Lessard, & Benner, 2007). It is also included in the CDC’s Updated Compendium of Evidence-Based HIV Prevention Interventions (CDC, 2007).

AM

The Anger Management (AM) condition included one session of HIV prevention information. The remaining 5 sessions focused on giving feedback, receiving criticism, withstanding peer pressure, as well as communication, negotiation and problem solving skills to minimize aggression (Hammond, Yung, & Kadis, 1990).

Assessment Procedures

Initial assessments were conducted one week following admission to treatment, provided authorization was obtained from treatment staff attesting that detoxification was complete. The purpose of this protocol was to diminish the impact of detoxification/withdrawal symptoms on assessment performance, as well as to improve the likelihood of response accuracy. Follow-up assessments were conducted at 3-months follow-up, employing the same protocols as the initial assessments.
Interviewers were experienced and well-trained in assessment procedures. Each interview was conducted over a 90-minute period, and measures were administered verbally so as to improve the chance of accurate reporting, to ensure completion of measures, and to circumvent issues related to reading/comprehension difficulties. Throughout the course of the study, interviewers were under the regular supervision of a clinical psychologist.

Assessments focused on personality style, HIV sexual risk behaviors, and alcohol and other drug use. Participants were notified that their responses would be confidential. They were asked to respond honestly and accurately.

**Measures**

*Personality Measures*

Four scales from the Millon Adolescent Clinical Inventory (MACI; Millon, 1993) were used to assess antisocial, dependent, avoidant, and borderline personality traits; these styles correspond to the MACI Unruly, Submissive, Inhibited, and Borderline Tendency scales, respectively. The MACI is a 160 item self-report, computer-scored measure, designed to assess theoretical prototypes articulated in Millon's (1985) theory of personality and psychopathology; a notable strength of the instrument. MACI scales are ideally suited for testing hypotheses that are tied to Millon's theory. Moreover, these scales have been found to be useful in discriminating risk behavior in previous preliminary studies (Malow et al., 2007; Devieux et al., 2009; McMahon, Malow, Dévieux, Jennings, & Rosenberg, 2007)

The personality scales of the MACI were derived in a 3-step validation process (Millon, 1993). During the first, theoretical-substantive step, items were developed to be
congruent with essential features of theory-derived (Millon, 1990) constructs. Next, the internal-structural step, “rational” items were analyzed for internal consistency. Alpha coefficients, item-scale correlations, and factor analyses were computed and scales were refined on the basis of those results. The final, external-criterion, step consisted of evaluating scale linkages to external criterion indices, such as clinician judgments and other measures (Millon, 1993). A MACI development sample, and two cross-validation samples (total n= 912), were employed in test development and validation.

The MACI employs Base Rate scores (BR scores). BR scores are converted metrics based on the assumption of non-normally distributed data. BR scores are derived based on estimates of population prevalence rates of a given clinical variable (Millon, 1993). The presence of a characteristic is indicated by BRs >74 <84, while the prominence of a characteristic is indicated by BRs > 85 (Millon, 1993).

Unruly scale (39 items). The Unruly scale measures adolescent features of antisocial personality. High scorers on the Unruly scale are assumed to have a tendency toward antisocial acting out, and demonstrate a rebellious attitude, seemingly unwilling to comply and behave pro-socially. They are assumed to be impulsive, commit wrongful acts without the experience of guilt or remorse, and consistently violate others’ rights. Sample items include “I sometimes scare other kids to get them to do what I want,” “I don't care much what other kids think of me,” “Telling lies is a pretty normal thing to do” (Millon, 1993). Face validity was evidenced by Davis’ (1995) identification, via factor analysis, of six content factors of the unruly scale, highlighting the central features of this personality pattern, including impulsive disobedience, socialized substance abuse, authority rejection, unlawful activity, callous manipulation, and sexual absorption.
(McCann, 1999). These dimensions reflect the dimension of antisociality underlying the Unruly scale. In the MACI validation effort, the Unruly scale demonstrated very good internal consistency ($\alpha = .84$) and good test-retest reliability ($\alpha = .79$) (Millon, 1993). The MACI Unruly scale also revealed anticipated associations with three subscales of the Problem Oriented Screening Instrument for Teenagers (POSIT, 1998)—the Substance Use or Abuse scale ($r = 0.41$) and the Family Relations scale ($r = 0.46$)—and with the Maturity Fears subscale of the EDI-2 ($r = -0.48$) (McCann, 1999). Finally, a statistically significant correlation between MACI BR scores on the Unruly scale and clinician judgments that the unruly personality pattern most closely matched their impression of the client, was found ($r = 0.20, p < .05$; Millon, 1993).

Submissive scale (48 items). The Submissive scale measures adolescent features of dependent personality. High scorers tend to be unassertive, and may be kind, sentimental, and gentle. They may require a great deal of reassurance and tend to avoid conflict whenever possible. These types may be unlikely to take on leadership roles. Sample items include “I worry a great deal about being left alone;” “I prefer being told what to do rather than having to decide for myself;” “There are times when I feel that I’m a much younger person than I actually am” (Millon, 1993). Face validity was evidenced by Davis’ (1995) identification of six content factors of the Submissive scale, highlighting the central features of this personality pattern, including deficient assertiveness, authority respect, pacific disposition, attachment anxiety, social correctness, and guidance seeking (McCann, 1999). These dimensions reflect the theoretical construct underlying the Submissive scale. In the MACI validation effort, the Submissive scale demonstrated adequate internal consistency ($\alpha = .74$) and very good
test-retest reliability ($\alpha = .88$) (Millon, 1993). Preliminary evidence relating to concurrent validity was supported by a significant correlation with the Maturity Fears subscale of the EDI-2 ($r = 0.52$) and a negative correlation with the Family Relations scale of the POSIT ($r = -0.44$), suggesting a need for family harmony may characterize those with elevations on this scale (McCann, 1999). Finally, a statistically significant correlation between MACI BR scores on the Submissive scale and clinician judgments that the submissive personality pattern most closely matched their impression of the client, was found ($r = 0.18, p < .05$; Millon, 1993).

**Inhibited scale** (37 items). The Inhibited scale measures adolescent features of avoidant personality. Higher scores are individuals who may be uncomfortable in the presence of others, and tend to be shy. These individuals may crave closeness and intimacy, yet may feel that keeping their distance from others is safer. They may react excessively to criticism and may often feel inadequate. Their poor self-concept may lead them to feel deserving of their isolation. Sample items include “I don’t think people see me as an attractive person,” “I won’t get close to people because I’m afraid they may make fun of me,” “I’m very uncomfortable with people unless I’m sure they really like me” (Millon, 1993). Face validity was evidenced by Davis’ (1995) identification of six content factors of the Inhibited scale, highlighting the central features of this personality pattern, including existential sadness, preferred detachment, self-conscious restraint, sexual aversion, rejection feelings and unattractive self-image (McCann, 1999). These dimensions reflect the theoretical construct underlying the Inhibited scale. In the MACI validation effort, the Inhibited scale demonstrated excellent internal consistency ($\alpha = .86$) and acceptable 3-to-7 day test-retest reliability ($\alpha = .70$; Millon, 1993). Preliminary
evidence relating to concurrent validity was supported by a significant correlation with the Ineffectiveness subscale of the EDI-2 \( (r = 0.41) \). Discriminant validity was evidenced by low correlations with the BDI \( (r = 0.21) \), designed to measure affective disturbance (McCann, 1999). Finally, a statistically significant correlation between MACI BR scores on the Inhibited scale and clinician judgments that the inhibited personality pattern most closely matched their impression of the client, was found \( (r = 0.27, p < .001; \text{Millon, } 1993) \).

**Borderline Tendency scale** (21 items). The Borderline Tendency scale measures adolescent features of borderline personality. Those scoring in the clinically elevated range are assumed to have vacillating and unstable moods, inconsistent interpersonal relationships, and erratic reactions. Although they may have a deep fear of abandonment, they may often demonstrate impulsive hostility and self-destructive actions. They can be chameleon-like as they change to adapt to different people and situations, lacking a stable sense of self. They may frequently feel a pervasive sense of emptiness. Sample items include “I usually act quickly, without thinking,” “Other people my age seem more sure than I am of who they are and what they want,” “I sometimes get so upset that I want to hurt myself seriously” (Millon, 1993). Face validity was evidenced by Davis’ (1995) identification of four content factors of the Borderline Tendency scale, including *empty loneliness, capricious reactivity, uncertain self-image* and *suicidal impulsivity* (McCann, 1999). These dimensions reflect the theoretical construct underlying the Borderline Tendency scale. In the MACI validation effort, the Borderline Tendency scale demonstrated excellent internal consistency \( (\alpha = .86) \) and excellent 3-to-7 day test-retest reliability \( (\alpha = .92; \text{Millon, } 1993) \). Preliminary evidence relating to concurrent validity...
was supported by high correlations with the Body Dissatisfaction \((r = 0.67)\), Ineffectiveness \((r = 0.60)\), Introceptive Awareness \((r = 0.55)\), and Impulse Regulation \((r = 0.62)\) subscales of the EDI-2. Moderate correlations with the BDI \((r = 0.47)\), the Beck Hopelessness Scale \((r = 0.50)\) and the BAI \((r = 0.33)\) indicate that the Borderline Tendency scale is measuring emotional turmoil, to some degree (McCann, 1999). This scale was excluded from the clinician judgments portion of the test validation process (Millon, 1993).

**Sex risk measures.**

Sexual risk behavior was assessed using an adapted version (Malow & Ireland, 1996) of the Risk Behavior Assessment (RBA; NIDA, 1991). This instrument surveys, via structured interview, the participation in sexual risk behaviors and the frequencies of these behaviors over specific time intervals. Examples of these variables include retrospective recall of number of partners, unprotected sex acts, and condom use. Frequency was assessed by the total number of days over the last 3 months that a participant engaged in the specific behavior (range 0-92). Accurate recall was promoted via calendar-based methodology (i.e., a Time-Line Follow-Back Procedure; Sobell & Sobell, 1980). The RBA demonstrated high internal consistency with alpha values ranging from .66 to .83, and high test-retest reliability (Needle et al., 1995), as well as good validity (Dowling-Guyer et al., 1994; Fisher et al., 1993) among a group of drug abusing adults and adolescents.

Demographics, information about sexual behavior, substance use, and personality styles, were collected via interview. Demographics and data on personality styles were only collected at baseline.
Preliminary Analyses

An attrition analysis was conducted in order to determine if those participants who were not available for follow-up differed from those who were followed on various demographic variables as well as personality styles, percent unprotected sex acts and number of partners. In order to test the normality of the distributions, skewness and kurtosis values & errors were computed for the dependent and independent variables. In addition, gender, ethnicity, age, treatment, and substance use variables were evaluated using bivariate correlations and Pearson r tests, as possible variables to be controlled for in model regression analyses. Variables that were found to be significantly correlated with the dependent variables were included in subsequent regression analyses as covariates. The SPSS statistical package was used for all analyses (SPSS, 2009).

Primary Analyses

This study involved a number of hierarchical regression analyses. Control variables were entered into the regression model in a sequence wherein each subsequent block of control variables were, theoretically, more strongly related to the dependent variables (Tabachnick & Fidell, 2007). In each analysis, age, ethnicity, gender, drug use variables, and intervention status, were entered in the first block. The second block included the three personality variables that were not central to the hypothesis being tested. In the last block, the personality scale of central importance to each hypothesis was entered. This analytic strategy was adopted to test hypotheses relevant to both number of sex partners and percent sex acts unprotected. Hypotheses 1, 3, 5, 7, 8, 10, & 12 involve prediction of risk behaviors at baseline. Hypotheses 2, 4, 6, 9, 11, & 13 involve prediction of risk behaviors at follow-up. Analyses involving prediction of risk
behaviors at follow-up controlled for baseline levels of the same variables (i.e., number of sex partners and percent sex acts unprotected).
CHAPTER 3

Results

Preliminary Analyses

Descriptives

Preliminary analyses included descriptive statistics of participant characteristics. Mean and standard deviation (SD) values for age and intake levels of drug use, as well as frequencies for race and gender are presented in Table A1. Separate statistics are reported for: 1) those who completed 3-month follow-up (henceforth referred to as ‘completers,’ n=127); 2) those who did not complete 3-month follow-up (henceforth referred to as ‘non-completers,’ n=131), and 3) both groups combined (henceforth referred to as ‘intent to treat,’ n=258). The completers group consisted of 127 participants between 13 and 18 years of age with a mean age of 15.56 years. The sample was over 78% male, and the racial/ethnic breakdown was as follows: 11.1% White, 19.8% Black, 38.9% Hispanic, and 30.2% Other. Over the 3-month period prior to intake, the sample consumed alcohol an average of 8.72 days (SD=13.93), used marijuana an average of 35.33 days (SD=33.31), used cocaine an average of 5.61 days (SD=17.61), and engaged in polysubstance use an average of 11.68 days (SD=20.72).

Means and standard deviation values of the predictor and criterion variables, along with skewness and kurtosis values of the criterion variables, can be found in Table A2. For the completers group, mean raw scores on the personality scales were as follows: Unruly, 23.00 (SD= 5.81); Submissive, 24.20 (SD=5.77); Inhibited, 9.67 (SD=5.42); and Borderline Tendency, 7.65 (SD=4.47). Over the 3-month period prior to intake, the mean number of sex partners was 1.91 (SD=2.77; Skew=5.11; Kurtosis=38.17) and the mean
percentage of sex acts unprotected was 41.28 (SD=39.41; Skew=.28; Kurtosis=-1.48). Bivariate correlations of the predictor and criterion variables are presented in Table A3.

Attrition Analyses

Analyses were conducted to determine whether the completers group (n=127) differed from non-completers group (n=131) on any of the predictor, criterion or control variables to be used in the regression models. Chi-square analyses were used to ascertain differences between the groups on categorical demographic variables, and revealed no significant differences between the groups in race ($\chi^2 = 1.96, p = .580$), intervention group ($\chi^2 = .05, p = .819$), or gender ($\chi^2 = 2.45, p = .117$). Analyses of Variance (ANOVAs) were used to compare groups on continuous measures such as age, personality style scores, substance use, and intake levels of sexual risk. Analyses revealed that the groups did not differ significantly on age [$F (1, 256) = .99, p = .322$], or any of the personality scale scores: unruly [$F (1, 256) = .022, p = .882$]; submissive [$F (1, 256) = .17, p = .679$]; inhibited [$F (1, 256) = .08, p = .775$]; borderline [$F (1, 256) = .01, p = .936$]. Moreover, groups did not differ on drug use over the 3 months prior to intake: alcohol [$F (1, 256) = .02, p = .882$]; marijuana [$F (1, 256) = .09, p = .765$]; cocaine [$F (1, 256) < .01, p = .952$], multiple substance [$F (1, 256) = .36, p = .549$]. Finally, groups did not differ with respect to sex risk variables at intake: number of sex partners in the 3 months prior to intake [$F (1, 256) < .001, p = .986$], percentage of sex acts unprotected in the 3 months prior to intake [$F (1, 256) = 1.75, p = .187$].

Normality, Outliers, and Missing Values

For the primary analyses, the completers group was examined. Criterion variables were examined for outliers. Standardized scores were computed and cases with
standardized scores above 3.29 were removed from analysis (Tabachnick & Fidell, 2007). A total of 4 cases were removed from analysis due to their very large and disconnected standardized scores (> 3.29). For the remaining 127 participants, less than 5% of data were missing. Missing values were conservatively estimated and imputed via mean substitution (Tabachnick & Fidell, 2007). Distributions of all of the criterion variables appeared normal, with the exception of ‘total number of sex partners last 3 months,’ however, after fitting the model and verifying the distribution of the residuals, this variable did not violate the assumption of normality. Residual skewness values were less than .695 and residual kurtosis values were less than .604. These values indicate that distributions did not differ significantly from normal, as the commonly accepted cutoff scores for skew and kurtosis are >|3| for skew, >|~10| kurtosis respectively (Kline, 2005).

**Primary Analyses**

*Hierarchical Regression Analyses*

Primary analyses consisted of a series of hierarchical regression analyses. Analyses controlled for a number of covariates including age, gender, intervention group, race, intake levels of alcohol, marijuana, cocaine, polysubstance use variables (drug variables will henceforth be referred to as ‘drug use’), and intake levels of the criterion variable, when applicable. Analyses also controlled for personality style predictors not central to particular hypotheses being tested. This stringent process was employed in order to determine whether each hypothesized predictor accounted for an additional increment in explained variance in the criterion variable after controlling for covariates and for the other non-hypothesis specific personality variables. The method allowed for
the isolation of the unique variance in the criterion variable that was attributable to the hypothesis specific predictor.

In each regression, the hypothesis specific predictor involved raw scores from the relevant scale of the Millon Adolescent Clinical Inventory (MACI). The dependent variable was either number of sex partners (at baseline or follow-up) or percentage of sex acts unprotected (at baseline or follow-up), as measured by the Risk Behavior Assessment (RBA) report of the last 3-month period. Regressions followed a standardized method of entry in order to evaluate the hypotheses. The method consisted of entering the variables in three consecutive models. Control variables, entered first, included age, gender, race, intervention group, and intake levels of drug use. Regressions examining follow-up criterion variables also controlled for baseline levels of the criterion in model 1. In the second model, the personality variables not of central importance to the hypothesis in question were entered. Finally, the personality style in focus in each hypothesis was entered into the third model.

**Hypothesis 1:** It was hypothesized that level of unruly personality style would be positively associated with number of sex partners at baseline.

Multiple regression analysis did not support Hypothesis 1 ($F[14, 112] = 0.80, p = .673$). Results suggested that model 1 control variables ($\Delta R^2 = .078, F[10, 116] = 0.99, p = .460$), model 2 personality control variables ($\Delta R^2 = .012, F[3, 113] = 0.48, p = .694$), and level of unruly personality style examined in model 3 ($\Delta R^2 < .001, F[1, 112] = 0.05, p = .821$) were not significant predictors of number of sex partners at baseline. Level of unruly personality style did not account for a significant amount of explained variance in
number of sex partners at baseline, over and above the variance attributable to models 1 and 2.

**Table 1. Baseline Number of Sex Partners and Unruly Personality Style**

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$F$</th>
<th>df</th>
<th>$p$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>.078</td>
<td>0.99</td>
<td>116</td>
<td>.460</td>
<td>.078</td>
<td>.058</td>
<td>.786</td>
<td>.078</td>
</tr>
<tr>
<td>Model 2</td>
<td>.090</td>
<td>0.01</td>
<td>113</td>
<td>.694</td>
<td>.012</td>
<td>.004</td>
<td>.928</td>
<td>.012</td>
</tr>
<tr>
<td>Model 3: Unruly</td>
<td>.090</td>
<td>0.05</td>
<td>112</td>
<td>.821</td>
<td>.048</td>
<td>0.23</td>
<td>.821</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

**Hypothesis 2:** It was hypothesized that level of unruly personality style would be positively associated with number of sex partners at follow-up, controlling for baseline levels of the same variable.

Multiple regression analysis did not support the hypothesis ($F[15, 111] = 0.49$, $p = .939$). Results indicated that the model 1 control variables ($\Delta R^2 = .058$, $F[11, 115] = 0.65$, $p = .786$), model 2 personality control variables ($\Delta R^2 = .004$, $F[3, 112] = 0.15$, $p = .928$), and level of unruly personality style (model 3; $\Delta R^2 = .001$, $F[1, 111] = 0.07$, $p = .786$) were not important predictors of number of sex partners at follow-up. Level of unruly personality style did not result in a significant increase in explained variance in number of sex partners at follow-up over and above the variance attributable to models 1 and 2.

**Table 2. Follow-up Number of Sex Partners and Unruly Personality Style**

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$F$</th>
<th>df</th>
<th>$p$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>.058</td>
<td>0.65</td>
<td>115</td>
<td>.786</td>
<td>.058</td>
<td>.273</td>
<td>.786</td>
<td>.001</td>
</tr>
<tr>
<td>Model 2</td>
<td>.062</td>
<td>0.15</td>
<td>112</td>
<td>.928</td>
<td>.004</td>
<td>.273</td>
<td>.786</td>
<td>.001</td>
</tr>
<tr>
<td>Model 3: Unruly</td>
<td>.063</td>
<td>0.07</td>
<td>111</td>
<td>.786</td>
<td>.059</td>
<td>.273</td>
<td>.786</td>
<td>.001</td>
</tr>
</tbody>
</table>

**Hypothesis 3:** It was hypothesized that level of unruly personality style would be positively associated with percentage of sex acts unprotected, among those that were sexually active, at baseline.
Multiple regression analysis did not support the hypothesis, \((F[14, 81] = 1.27, p = .248)\). Results suggested that Model 1 control variables \((\Delta R^2 = .152, F[10, 85] = 1.53, p = .143)\), model 2 personality control variables \((\Delta R^2 = .021, F[3, 82] = 0.70, p = .557)\), and level of unruly personality style \((\Delta R^2 = .006, F[1, 81] = 0.59, p = .448)\) were not significant predictors of percentage of sex acts unprotected at baseline among those that were sexually active. Level of unruly personality style did not result in a significant increase in explained variance in percentage of sex acts unprotected at baseline over and above the variance attributable to models 1 and 2.

Table 3. Baseline % of Unprotected Sex Acts and Unruly Personality Style

<table>
<thead>
<tr>
<th>Model</th>
<th>(R^2)</th>
<th>(F)</th>
<th>(df)</th>
<th>(p)</th>
<th>(\beta)</th>
<th>(t)</th>
<th>(p)</th>
<th>(\Delta R^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>.152</td>
<td>1.53</td>
<td>85</td>
<td>.143</td>
<td></td>
<td></td>
<td></td>
<td>.152</td>
</tr>
<tr>
<td>Model 2</td>
<td>.173</td>
<td>0.21</td>
<td>82</td>
<td>.557</td>
<td></td>
<td></td>
<td></td>
<td>.021</td>
</tr>
<tr>
<td>Model 3: Unruly</td>
<td>.179</td>
<td>0.01</td>
<td>81</td>
<td>.448</td>
<td>-.184</td>
<td>-0.76</td>
<td>.448</td>
<td>.006</td>
</tr>
</tbody>
</table>

**Hypothesis 4:** It was hypothesized that level of unruly personality style would be positively associated with percentage of sex acts unprotected at follow-up, among those that were sexually active at follow-up, controlling for baseline levels of the same variable.

Results from this multiple regression analysis did not support the hypothesis. Results for this multiple regression were significant \((F[15, 59] = 2.36, p = .010)\), however level of unruly personality style was not a significant predictor of percentage of sex acts unprotected at follow-up among those that were sexually active at follow-up \((\beta = .073, t = 0.29, p = .776)\). Among the control variables, baseline values of percentage of sex acts unprotected was a significant predictor of percentage of unprotected sex acts at follow-up \((\beta = .449, t = 4.03, p < .001)\). This result indicated that each SD increase in the distribution of scores in percentage of sex acts unprotected at baseline was associated
with a .449 SD increase in percentage of sex acts unprotected at follow-up. The overall model accounted for 37.5% of the variance in the criterion. Covariates, entered into the regression first, accounted for the most variance (35.1%), and this predicted variance was statistically significant ($\Delta R^2 = .351, F[11, 63] = 3.09, p = .002$). The other predictors accounted for an additional 2.4% of variance in the criterion, although this increase was not significant ($\Delta R^2 = .024, F[3, 60] = 0.76, p = .523$). Finally, level of unruly personality did not account for a significant predictive increment in variance in the criterion over and above the variance attributable to models 1 and 2 ($\Delta R^2 = .001, F[1, 59] = 0.08, p = .776$).

| Table 4. Follow-up % of Unprotected Sex Acts and Unruly Personality Style |
|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                   | $R^2$           | $F$             | $df$           | $p$             | $\beta$        | $t$             | $p$             | $\Delta R^2$   |
| Model 1           | .351            | 3.09            | 63             | .002            | .351           | .523            | .024            |
| Model 2           | .374            | 0.76            | 60             | .523            | .375           | .08             | .001            |
| Baseline % unprotected | .449           | 4.03            | < .001         | .449            | .449           | 4.03            | < .001         |
| Model 3: Unruly   | .375            | 0.08            | 59             | .776            | .073           | 0.29            | .776            | .001            |

Hypothesis 5: It was hypothesized that level of submissive personality style would be positively associated with percentage of sex acts unprotected, among those that were sexually active, at baseline.

Multiple regression analysis did not support the hypothesis ($F[14, 81] = 1.27, p = .248$). Results suggested that model 1 control variables ($\Delta R^2 = .152, F[10, 85] = 1.53, p = .143$), model 2 personality control variables ($\Delta R^2 = .022, F[3, 82] = 0.72, p = .542$), and model 3 level of submissive personality style ($\Delta R^2 = .005, F[1, 81] = 0.51, p = .477$) were not important predictors of percentage of sex acts unprotected at baseline among those that were sexually active. Level of submissive personality style did not result in a significant increase in explained variance in percentage of sex acts unprotected at baseline over and above the variance attributable to models 1 and 2.
Table 5. Baseline % of Unprotected Sex Acts and Submissive Personality Style

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$F$</th>
<th>$df$</th>
<th>$p$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>.152</td>
<td>1.53</td>
<td>85</td>
<td>.143</td>
<td></td>
<td></td>
<td></td>
<td>.152</td>
</tr>
<tr>
<td>Model 2</td>
<td>.174</td>
<td>0.72</td>
<td>82</td>
<td>.542</td>
<td></td>
<td></td>
<td></td>
<td>.022</td>
</tr>
<tr>
<td>Model 3: Submissive</td>
<td>.179</td>
<td>0.51</td>
<td>81</td>
<td>.477</td>
<td>-.137</td>
<td>-0.72</td>
<td>.477</td>
<td>.005</td>
</tr>
</tbody>
</table>

**Hypothesis 6:** It was hypothesized that level of submissive personality style would be positively associated with percentage of sex acts unprotected at follow-up, among those that were sexually active at follow-up, controlling for baseline levels of the same variable.

Results from this multiple regression analysis did not support the hypothesis. The multiple regression was statistically significant ($F[15, 59] = 2.36, p = .010$), however, level of submissive personality style was not a significant predictor of percentage of sex acts unprotected at follow-up ($\beta = .225, t = 1.14, p = .259$). As reflected in a parallel analysis involving unruly personality style, percentage of sex acts unprotected at baseline was a significant predictor of percentage of unprotected sex acts at follow-up ($\beta = .449, t = 4.03, p < .001$). The overall model accounted for 37.5% of the variance in the criterion. Covariates, entered into the regression first, accounted for the most variance (35.1%), and this predicted variance was statistically significant ($\Delta R^2 = .351, F[11, 63] = 3.09, p = .002$). The other predictors accounted for an additional 1.1% of variance in the criterion, although this increase was not significant ($\Delta R^2 = .011, F[3, 60] = 0.34, p = .798$). Finally, level of submissive personality accounted for an additional 1.4% of variance in the criterion, however this increase was not statistically significant ($\Delta R^2 = .014, F[1, 59] = 1.30, p = .259$). These results suggested that level of submissive personality style did not account for a significant amount of explained variance in percentage of sex acts unprotected at follow-up, over and above the variance attributable to models 1 and 2.
Hypothesis 7: It was hypothesized that level of inhibited personality style would be negatively associated with number of sex partners at baseline.

Results from multiple regression analysis did not support this hypothesis, $F[14, 112] = 0.80, p = .673$. The control variables and the other predictors were entered into the regression in the first and second model respectively, with neither model associated with statistically significant explained variance in number of sex partners at baseline ($\Delta R^2 = .078, F[10, 116] = 0.99, p = .460; \Delta R^2 = .009, F[3, 113] = 0.38, p = .770$). In the third model, inhibited personality style was entered into the regression, but did not result in a significant increase in explained variance in number of sex partners at baseline over and above the variance attributable to models 1 and 2 ($\Delta R^2 = .003, F[1, 112] = 0.37, p = .546$).

Hypothesis 8: It was hypothesized that level of inhibited personality style would be positively associated with percentage of sex acts unprotected, among those that were sexually active, at baseline.
Results from this analysis did not support the hypothesis ($F[14, 81] = 1.27, p = .248$). For this analysis, neither model 1 control variables ($\Delta R^2 = .152, F[10, 85] = 1.53, p = .143$) nor model two personality control variables ($\Delta R^2 = .011, F[3, 82] = 0.35, p = .787$) explained significant variance in percentage of sex acts unprotected at baseline.

Model 3 level of inhibited personality style also did not result in a significant increase in explained variance in percentage of sex acts unprotected at baseline over and above the variance attributable to models 1 and 2 ($\Delta R^2 = .016, F[1, 81] = 1.60, p = .210$).

<table>
<thead>
<tr>
<th>Table 8. Baseline % of Unprotected Sex Acts and Inhibited Personality Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R^2$</td>
</tr>
<tr>
<td>Model 1</td>
</tr>
<tr>
<td>Model 2</td>
</tr>
</tbody>
</table>

Hypothesis 9: It was hypothesized that level of inhibited personality style would be positively associated with percentage of sex acts unprotected at follow-up, among those that were sexually active at follow-up, controlling for baseline levels of the same variable.

Results from multiple regression analysis did not support the hypothesis. The multiple regression were statistically significant ($F[15, 59] = 2.36, p = .010$), however, level of inhibited personality style was not a significant predictor of percentage of sex acts unprotected at follow-up ($\beta = -1.50, t = -0.10, p = .323$). As identified in previous parallel analyses, baseline values of percentage of sex acts unprotected was the only control variable to significantly predict percentage of sex acts unprotected at follow-up, ($\beta = .449, t = 4.03, p < .001$). The overall model accounted for 37.5% of the variance in the criterion. Covariates, entered into the regression analysis first, accounted for the most
variance (35.1%), and this predicted variance was statistically significant ($\Delta R^2 = .351, F[11, 63] = 3.09, p = .002$). Model 2 personality control variables accounted for an additional 1.4% of variance in the criterion, although this increase was not significant ($\Delta R^2 = .014, F[3, 60] = 0.44, p = .724$). Finally, level of inhibited personality (Model 3) did not account for a significant increase in predicted variance in the criterion ($\Delta R^2 = .011, F[1, 59] = 0.99, p = .323$).

Table 9. Follow-up % of Unprotected Sex Acts and Inhibited Personality Style

<table>
<thead>
<tr>
<th></th>
<th>$R^2$</th>
<th>$F$</th>
<th>df</th>
<th>$p$</th>
<th>$\beta$</th>
<th>t</th>
<th>$p$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>.351</td>
<td>3.09</td>
<td>63</td>
<td>.002</td>
<td></td>
<td></td>
<td></td>
<td>.351</td>
</tr>
<tr>
<td>Model 2</td>
<td>.365</td>
<td>0.44</td>
<td>60</td>
<td>.724</td>
<td></td>
<td></td>
<td></td>
<td>.014</td>
</tr>
<tr>
<td>Baseline % unprotected</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.449</td>
<td>4.03</td>
<td>&lt; .001</td>
<td></td>
</tr>
<tr>
<td>Model 3: Inhibited</td>
<td>.375</td>
<td>0.99</td>
<td>59</td>
<td>.323</td>
<td>-1.50</td>
<td>-1.00</td>
<td></td>
<td>.323 .011</td>
</tr>
</tbody>
</table>

**Hypothesis 10:** It was hypothesized that level of borderline tendency personality style would be positively associated with number of sex partners at baseline.

Results from this analysis did not support the hypothesis ($F[14, 112] = 0.80, p = .673$). Model 1 control variables and Model 2 personality control variables were entered into the regression in the first and second model respectively, with neither model resulting in significant explained variance in number of sex partners at baseline ($\Delta R^2 = .078, F[10, 116] = 0.99, p = .460, p = .485; \Delta R^2 = .007, F[3, 113] = 0.31, p = .820$). Model 3, level of borderline tendency personality style, was entered into the regression, but did not result in a significant increase in explained variance in number of sex partners at ($\Delta R^2 = .005, F[1, 112] = 0.56, p = .451$).

Table 10. Baseline Number of Sex Partners and Borderline Personality Style

<table>
<thead>
<tr>
<th></th>
<th>$R^2$</th>
<th>$F$</th>
<th>df</th>
<th>$p$</th>
<th>$\beta$</th>
<th>t</th>
<th>$p$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>.078</td>
<td>.99</td>
<td>116</td>
<td>.460</td>
<td></td>
<td></td>
<td></td>
<td>.078</td>
</tr>
<tr>
<td>Model 2</td>
<td>.086</td>
<td>.31</td>
<td>113</td>
<td>.820</td>
<td></td>
<td></td>
<td></td>
<td>.007</td>
</tr>
<tr>
<td>Model 3: Borderline</td>
<td>.090</td>
<td>.57</td>
<td>112</td>
<td>.451</td>
<td>.114</td>
<td>.76</td>
<td>.451</td>
<td>.005</td>
</tr>
</tbody>
</table>
Hypothesis 11: It was hypothesized that level of borderline tendency personality style would be positively associated with number of sex partners at follow-up, controlling for baseline levels of the same variable.

Results from this multiple regression analysis did not support the hypothesis \( (F[15, 111] = 0.66, p = .939) \). For this analysis, neither model 1 control variables \( (\Delta R^2 = .058, F[11, 115] = 0.65, p = .786) \), nor model 2 personality control variables \( (\Delta R^2 = .004, F[3, 112] = 0.18, p = .912) \) explained a significant amount of variance in number of sex partners at follow-up. Level of borderline tendency personality style (model 3) resulted in a negligible increase in explained variance in number of sex partners at follow-up over and above the variance attributable to models 1 and 2 \( (\Delta R^2 = .000, F[1, 111] = 0.00, p = .963) \).

<table>
<thead>
<tr>
<th></th>
<th>( R^2 )</th>
<th>( F )</th>
<th>( df )</th>
<th>( p )</th>
<th>( \beta )</th>
<th>( t )</th>
<th>( p )</th>
<th>( \Delta R^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>.058</td>
<td>0.65</td>
<td>115</td>
<td>.786</td>
<td></td>
<td></td>
<td></td>
<td>.058</td>
</tr>
<tr>
<td>Model 2</td>
<td>.063</td>
<td>0.18</td>
<td>112</td>
<td>.912</td>
<td></td>
<td></td>
<td></td>
<td>.004</td>
</tr>
<tr>
<td>Model 3: Borderline</td>
<td>.063</td>
<td>0.16</td>
<td>111</td>
<td>.963</td>
<td>.007</td>
<td>0.05</td>
<td>.963</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

Hypothesis 12: It was hypothesized that level of borderline tendency personality style would be positively associated with percentage of sex acts unprotected, among those that were sexually active, at baseline.

Results from multiple regression analysis did not support the hypothesis, \( (F[14, 81] = 1.27, p = .248) \). For this analysis, neither model 1 control variables \( (\Delta R^2 = .152, F[10, 85] = 1.53, p = .143) \), nor model 2 personality control variables \( (\Delta R^2 = .012, F[3, 82] = 0.40, p = .754) \) explained significant variance in percentage of sex acts unprotected at baseline. The third model, level of borderline personality style, also failed to demonstrate an increase in explained variance \( (\Delta R^2 = .015, F[1, 81] = 1.46, p = .231) \).
Table 12. Baseline % of Unprotected Sex Acts and Borderline Personality Style

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$F$</th>
<th>df</th>
<th>$p$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>.152</td>
<td>1.53</td>
<td>85</td>
<td>.143</td>
<td>.152</td>
<td></td>
<td></td>
<td>.152</td>
</tr>
<tr>
<td>Model 2</td>
<td>.165</td>
<td>0.40</td>
<td>82</td>
<td>.754</td>
<td>.012</td>
<td></td>
<td></td>
<td>.012</td>
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<tr>
<td>Model 3: Borderline</td>
<td>.179</td>
<td>1.46</td>
<td>81</td>
<td>.231</td>
<td>.191</td>
<td>1.21</td>
<td>.231</td>
<td>.015</td>
</tr>
</tbody>
</table>

Hypothesis 13: It was hypothesized that level of borderline tendency personality style would be positively associated with percentage of sex acts unprotected at follow-up, among those that were sexually active at follow-up, controlling for baseline levels of the same variable.

Results from multiple regression analysis did not support the hypothesis. The multiple regression was statistically significant ($F[15, 59] = 2.36, p = .010$), however, level of borderline tendency personality style was not a significant predictor of percentage of sex acts unprotected at follow-up ($\beta = .090, t = 0.51, p = .613$). As demonstrated in prior parallel analyses, baseline values of percentage of sex acts unprotected was the only control variable to significantly predict percentage of unprotected sex acts at follow-up ($\beta = .449, t = 4.03, p < .001$). The overall model accounted for 37.5% of the variance in the criterion. Covariates, entered into the regression first, accounted for the most variance (35.1%), and this predicted variance was statistically significant ($\Delta R^2 = .351, F[11, 63] = 3.09, p = .002$). The other predictors accounted for an additional 2.2% of variance in the criterion, although this increase was not significant ($\Delta R^2 = .022, F[3, 60] = 0.69, p = .559$). Finally, level of borderline tendency personality accounted for an additional 0.3% of the variance in the criterion, a non-significant increase ($\Delta R^2 = .003, F[1, 59] = 0.26, p = .613$). These results indicated that level of borderline tendency personality style did not account for a significant
amount of explained variance in percentage of sex acts unprotected at follow-up, over
and above the variance attributable to models 1 and 2.

Table 13. *Follow-up % of Unprotected Sex Acts and Borderline Personality Style*

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$F$</th>
<th>$df$</th>
<th>$p$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>.351</td>
<td>3.09</td>
<td>63</td>
<td>.002</td>
<td>.351</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 2</td>
<td>.372</td>
<td>0.69</td>
<td>60</td>
<td>.559</td>
<td></td>
<td></td>
<td></td>
<td>.022</td>
</tr>
<tr>
<td>Baseline % unprotected</td>
<td>.449</td>
<td>4.03</td>
<td></td>
<td>&lt; .001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3: Borderline</td>
<td>.375</td>
<td>0.26</td>
<td>59</td>
<td>.613</td>
<td>.090</td>
<td>0.51</td>
<td>.613</td>
<td>.003</td>
</tr>
</tbody>
</table>

Supplemental Analyses

While relative measures of unprotected sex provide information about a latent
disposition to employ safer sex measures (Schroder, Carey & Vanable, 2003), a number
of authors have argued that proportion of unprotected sex acts is a less than ideal index
(Schroder et al., 2003; Kalichman et al., 2008; Jemmott & Jemmott, 2000; Jaccard,
McDonald, Wan, Dittus & Quinlan, 2002). It is argued that absolute counts may be the
best indicator of risk as they provide information about the number of possible exposures
to HIV. Since risk of infection increases with each unprotected sexual act, it seems that
counts may be a more sensitive measure of HIV risk. Schroder et al. (2003) have argued
that proportions may be skewed and misleading. The authors illustrate this case with the
following example: If Individual A had two sexual encounters, one of which was
unprotected, and Individual B had 100 sexual encounters, 50 of which were unprotected,
both would have a risk proportion of 50%. However, the behaviors of these individuals
certainly represent different levels of risk, which could be gleaned from their count
scores, being 1 and 50 respectively (Schroder et al., 2003). Due to the possibility
misleading results from the proportion data, count data was examined as well.
In examining proportions of unprotected sex, there is an assumption of sexual contact. Therefore those with zero partners should be excluded from the analyses. However, in examining count data, all participants may be included, as a zero count on this variable may be accurately interpreted, even for those with zero partners. Arguably, counts provide a more accurate representation of sexual behavior. Given the fact that the analyses with proportion measures were limited to those participants who reported one or more sexual partner(s), in the current study, analyses with these variables were limited by smaller sample sizes (n= 96 at baseline; n= 75 at follow-up). These sample sizes and the resulting low power may have compromised possible effect detection.

The analyses for unprotected sex detailed earlier were re-examined with count variables, which were computed from the percentage variables as well as the total number of sex acts variables (both at baseline and 3-month follow-up). Correlations between counts and proportions were significant at baseline ($r = .590, p < .001$), and at follow-up ($r = .616, p < .001$). The new criterion variables were examined for outliers as in the procedure described in the preliminary analysis section, and a total of three cases were dropped from analysis (n=128). The variables, ‘number of sex acts unprotected’ and ‘number of sex acts unprotected at follow-up’ both demonstrated non-normal distribution of residuals (baseline: skew = 3.94, kurtosis = 20.75; follow-up: skew = 5.07, kurtosis = 30.71). In order to handle these non-normal distributions, variables were transformed via log $10(x + 1)$ transformations, resulting in skewness and kurtosis values that did not differ significantly from zero (baseline: skew = 0.49, kurtosis = -1.09; follow-up: skew = 1.62, kurtosis = 1.70). Attrition analyses were also conducted for number of unprotected
sex acts at baseline, and no significant differences were found when comparing cominers and non-comiders on the basis of this variable ($F[1, 254] < 0.01, p = .958$).

Multiple regression analyses were conducted to examine the same relationships as articulated in Hypotheses 3,4,5,6,7,8,12, & 13 with counts of unprotected sex at baseline and follow-up as criterion variables in place of percentages of unprotected sex at baseline and follow-up. Other than changing the criterion variables, all regressions were run exactly as described in the primary analyses.

For the examination of baseline counts of unprotected sex acts, analyses controlled for age, gender, intervention group, race, and intake levels of drug use, entered in model 1. Analyses also controlled for the three other personality predictor variables, entered in model 2. All four regressions examining baseline counts of unprotected sex acts included all of the same variables, with slight variations in model 2 and model 3, depending on which personality predictor was being examined. For all four regressions, the omnibus models at baseline yielded significant findings, $F[14, 113] = 2.34, p = .007$. However, of the personality variables, only the inhibited style was a significant personality predictor of counts of unprotected sex acts at baseline. For all four regressions that were conducted with this criterion variable, gender was a significant predictor ($\beta = .224, t = 2.52, p = .013$), indicating that the female gender was associated with a .244 SD increase in number of sex acts unprotected at baseline. Age was also a significant predictor of the criterion ($\beta = .206, t = 2.41, p = .018$), indicating that each SD increase in age was associated with a .206 SD increase in number of unprotected sex acts. Inhibited personality style was a significant predictor of the criterion, however, in the direction opposite of what was expected ($\beta = -.265, t = -2.14, p = .035$), indicating that each SD
increase in inhibited personality style was associated with a .265 decrease in number of sex acts unprotected at baseline. For the analysis involving the inhibited style, the overall model explained 22.5% of the variance in the criterion. Covariates accounted for the majority of the variance in the criterion ($\Delta R^2 = .187, F[10, 117] = 2.69, p = .005$). When entered into model 3, level of inhibited personality style accounted for an additional 3.1% of the variance in the criterion, a significant increase ($\Delta R^2 = .031, F[1, 113] = 4.58, p = .035$). These results suggested that level of inhibited personality style accounted for a significant amount of explained variance in number of sex acts unprotected at baseline, over and above the variance attributable to models 1 and 2 (see tables A4 through A7).

For the examination of follow-up counts of unprotected sex acts, analyses controlled for age, gender, intervention group, race, and intake levels of drug use, and baseline number of unprotected sex acts in model 1. Analyses also controlled for the three other predictor variables in model 2. Given that all four regressions examining follow-up counts of unprotected sex acts included all of the same variables, with slight variations in model 2 and model 3, regressions examining follow-up counts of unprotected sex acts at baseline yielded significant findings, $F[15, 112] = 2.80, p = .001$, indicating that the omnibus models were significant. However, in the 4 regressions that were conducted for this criterion variable, number of sex acts unprotected at baseline was the only significant predictor of the criterion ($\beta = .372, t = 4.06, p < .001$), indicating that each SD increase in number of sex acts unprotected at baseline was associated with a .372 SD increase in number of sex acts unprotected at follow-up. The overall model explained 27.3% of the variance in the criterion. Covariates accounted for the majority of the variance in the criterion ($\Delta R^2 = .244, F[11, 116] = 3.41, p < .001$). None of the
personality variables predicted number of unprotected sex acts at follow-up to a significant degree. These results suggested that level of any personality style did not account for a significant amount of explained variance in number of sex acts unprotected at follow-up, over and above the variance attributable to models 1 and 2 (see tables A8 through A11).
CHAPTER 4

Discussion

Although many studies have attempted to understand the proximal and distal determinants of sexual risk behavior, relatively few studies have examined the relationships between maladaptive personality styles and HIV risk behavior. Moreover, extant literature in the area of personality and HIV risk behavior has predominantly addressed adult, clinical samples at the expense of other high risk samples. While a number of studies have indicated significant relationships between personality and HIV risk behavior, the question of which particular dimensions of personality psychopathology are responsible for driving risk behavior remains unanswered. Most studies have not isolated the discrete effects of various personality dimensions. Through stringent controls, the current study attempted to isolate and disentangle dimensions of personality that are theoretically linked to HIV risk in order to gain clarity about the predictive power of specific personality dimensions in relation to sexual risk behavior.

The purpose of this study was to investigate the relationships between four personality style dimensions—the adolescent variants of antisocial (unruly), dependent (submissive), avoidant (inhibited), and borderline (borderline tendency) and two important indicators of HIV risk behavior—number of sex partners and percentage of sex acts unprotected—at two different time points, among a sample of adolescents in court-mandated substance abuse treatment participating in an HIV prevention intervention.

Hypotheses were generated based on theory and empirical research drawn mostly from adult samples. A total of thirteen hypotheses were generated, and are summarized as
follows: Levels of unruly and borderline personality were hypothesized to be positively associated with number of sex partners and with percentage of sex acts unprotected, among those that were sexually active, at baseline (H1, H3, H10, H12). It was also hypothesized that levels of unruly and borderline personality would be positively associated with number of sex partners and with percentage of sex acts unprotected among those that were sexually active, at follow-up, after controlling for baseline levels of the criterion variable under examination (H2, H4, H11, H13). Further, level of submissive personality was hypothesized to be positively associated with percentage of sex acts unprotected, among those sexually active, at baseline (H5). The same relationship was hypothesized for follow-up (H6). Finally, it was hypothesized that level of inhibited personality would be negatively associated with number of sex partners at baseline (H7). Positive associations were predicted between level of inhibited personality and percentage of sex acts unprotected, among those that were sexually active at baseline as well as at follow-up (H8, H9).

Results of the current investigation failed to reject all thirteen null hypotheses, indicating that among substance abusing delinquent adolescents, none of the personality styles were significant predictors of HIV risk behavior, at either intake or 3-month follow-up, after controlling for a number of demographic variables, intervention type, and the other personality styles that were not central to the hypothesis being tested.

Among the supplemental analyses examining counts rather than proportions of unprotected sex acts, only one personality style, inhibited, yielded a significant relationship. Level of inhibited personality was predictive of unprotected sex act counts, at intake only, and interestingly, was in the opposite direction of what was anticipated.
Although the use of sex act counts allowed for the detection of a significant finding that was not discernable through the use of percentages, all of the other hypotheses involving counts of unprotected sex acts yielded null findings.

**Unique Challenges and Implications**

In the current study, a number of challenges were confronted unique to the population under examination, which may have contributed to the inability to detect significant effects. Likely the most salient challenge was the relative infrequency and inconsistency of sexual behavior among our sample of adolescents and the limited distributions of the variables under consideration. Another involved the potential differences in the salience of personality factors as predictors of risk behavior among adolescents as compared to adults.

The ability to detect a significant relationship requires that both predictor and criterion variables demonstrate adequate distributions. In the current investigation, insufficient variability of the criterion variables (number of sex partners and percentage of sex acts unprotected) at both intake and 3-month follow-up, as evidenced by non-normal skew and kurtosis values (see Table A12), may have significantly reduced the likelihood of detecting effects. A substantial percentage of the sample (over 24% at intake and over 40% at follow-up) reported having no sex partners in the past 3 months. Given that a considerable number of participants reported no sex partners, some analyses involving percentage of unprotected sex acts were conducted with smaller samples (n=75). Moreover, of those reporting sexual activity, a considerable proportion (22% at intake and 41% at follow-up, respectively) reported 0% sex acts unprotected, suggesting always using condoms when engaging in sexual activity. Proportions can be difficult to
interpret as the meaning of 0% unprotected would vary greatly when considering someone who engaged in a single sex act versus someone who engaged in fifty sex acts. Distributions with many zeros pose a problem in correlation analyses and often lead to null findings. The relatively low frequencies of sexual risk behavior likely limited opportunities for detection of meaningful predictor–criterion relationships.

Sexual activity among adolescents is characterized as infrequent and intermittent, with periods of sexual activity followed by somewhat extended periods of inactivity. Many adolescents in this study had not yet become sexually active and a considerable number of those sexually active in the 3-months prior to baseline assessment were not sexually active during the follow-up period. The inconsistency of adolescents’ sexual activity poses a challenge to the study of these variables (Loewenson, Ireland, & Resnick, 2004). Research on sexual risk behavior among adolescents faces challenges related to the irregularity of sexual contact at this developmental stage. Future research in this area would benefit from longitudinal studies over longer time frames in order to achieve greater accuracy in assessment and measurement of sexual risk behavior.

The distributions of the predictor variables may have been an additional obstacle in the detection of meaningful effects. Distributions of all four personality style scores were near normal as evidenced by adequate skew and kurtosis values, however, relatively low levels of endorsements of items on scales other than the unruly scale may be an important limitation of this study. Given that the sample consisted of a group of adolescent substance abusing delinquents, it is not surprising that many of these adolescents endorsed more of the unruly style items, and relatively fewer of the submissive and inhibited style items. The substance abusing delinquent youth of this
study may not have described themselves as especially inhibited or submissive. Additionally, interesting information can be gleaned from the distributions of scores on the prototypical items of the personality scales of the MACI (see Tables A12 and A13). Millon’s personality styles are articulated through prototypes, or theoretically coherent sets of correlated characteristics that are posited to be enduring and consistent (Millon & Davis, 1996). Each MACI personality style scale is comprised of a variety of items, including some prototypical items. Prototypical items are those that best capture the most salient characteristics of the style. High prototypal item endorsement frequencies of the unruly scale, and low prototypal item endorsement of the inhibited and submissive scales were noted, suggesting that the full clinical ranges of these styles may not be represented in our study sample.

Beyond the salient limitations of the distributions of the criterion and predictor variables are the differences in the salience of personality style constructs in adolescence as compared to in adulthood. It is unclear, for example, whether unruly tendencies among adolescents may be associated with different or fewer behavioral manifestations, as compared to adult manifestations of this pattern. For instance, the prototypical items of the unruly scale of the MACI reflect independence, self-focus and a tendency to disregard norms. However, none of the unruly prototypical items address the traits of impulsivity, aggressiveness and irresponsibility that are hallmarks of the adult antisocial style. Those traits are better accounted for by prototypical items on the MACI borderline and forceful scales. It is possible that the construct being assessed by the MACI unruly scale differs from the adult antisocial construct, which encompasses both norm violation and disregard for others, as well as independence, aggressiveness, irresponsibility and impulsivity. It
may be that the unruly style differs from the adult antisocial style in ways importantly related to risk behavior.

The vast majority of previous studies that have identified relationships between personality psychopathology and HIV risk behavior were conducted with adult samples (Kelley & Petry, 2000; McMahon, Malow, & Penedo, 1998; McMahon, Malow, & Jennings, 2000; Compton et al., 2000; Ladd & Petry, 2003; Gill et al., 1992; Compton et al., 1998; Martinez, 2004; Haro et al., 2004). The current study focused on a sample of substance abusing adolescent offenders. Although a great deal may be learned from the adult literature, and clues within that body of literature may help guide our efforts, the relevance of adult findings to anticipated findings in adolescent studies may be limited.

Adolescence is a period of rapid development, change, and turmoil. While there is definite evidence pointing to developmental continuity and to the consistency of basic personality structure as discussed in the review of the literature, personality at this life stage remains malleable (Westen & Chang, 2000). Consider the antisocial or unruly personality style. In the developing adolescent, these unruly traits may be the underpinnings of antisocial personality disorder (ASPD), or alternatively, may be transient reactions to various stressors in the context of an individual’s acting out communication or coping strategy. One of the DSM-IV criterion for ASPD is a diagnosis of conduct disorder in adolescence (APA, 2000). While early evidence of the pattern is a requirement of the adult diagnosis, perhaps the majority (Children’s Mental Health Ontario, 2001) do not go on to develop ASPD. These findings highlight the fact that personality patterns in adolescence may be less firmly rooted than in adulthood. As
Moffitt (1993) stated, though some forms of antisocial behavior are representative of a lifelong disturbance, other forms of this style are limited to adolescence.

Given the host of changes that are ongoing during adolescence, qualities of personality including self-image, social cognition, interpersonal behavior, and coping mechanisms of adolescents may be lacking clarity as compared to these same structural and functional domains in adulthood. Many aspects of personality, become more crystallized with age. With increased crystallization, personality factors may influence behavior to a greater extent. As individuals’ images of self and others, interpersonal style, coping and defense mechanisms become more clearly defined, their behavior would arguably be more strongly influenced by internal, as opposed to external, factors.

It is certainly possible that personality features among adolescents may not be sufficiently crystallized to influence behavior to the same degree that might be anticipated among adults. However, of the adolescent sample studies that are available, interesting findings have emerged pointing to meaningful differences in HIV risk-related attitudes, knowledge and beliefs based on dimensions of personality. In a cluster study of adolescent substance abusing offenders using a large group of participants from which the current study’s sample was drawn, McMahon et al. (2007) identified three psychopathology cluster subgroups via hierarchical agglomerative cluster analysis: Inhibited/Depressive (n=141); Submissive/Conforming (n=193); Antisocial-Unruly/ Self-Dramatizing (n=176). Analyses of variance (ANOVAs), controlling for education and ethnicity revealed a number of differences between clusters. Significant findings included that an Inhibited/Depressive cluster demonstrated poorer safe sex and condom attitudes, less favorable intentions to practice safer sex, and less sexual self-efficacy than a
Submissive/Conforming cluster. Moreover an Inhibited/Depressive cluster demonstrated less HIV risk-related knowledge than both a Submissive/Conforming cluster and an Antisocial cluster, but better intentions to engage in safer sex than an Antisocial cluster. Significant findings related to HIV risk behavior indicators, such as percentage of unprotected sex, were not found. Adolescent personality seems importantly linked with attitudes, intentions and knowledge, but not necessarily behavior.

In a similar study that differentiates personality’s impact on attitudes and beliefs versus behavior, Devieux et al. (2009) investigated a large group of incarcerated youth, from which the current study’s sample was drawn. The sample was divided into two groups based on level of borderline tendency style on the MACI: low and high borderline tendency. In order to test for between-group differences on sexual risk behavior and HIV risk-related attitudes and beliefs, multivariate analysis of covariance (MANCOVA) were performed. Additionally, analysis of covariance (ANCOVA) was performed to investigate group differences on condom use skills. Covariates included substance use during the previous three months, age, gender and ethnicity. Though this study found no differences between high and low borderline groups in sexual risk behavior at intake (including number of sex partners, proportions of unprotected sex, and proportions of unprotected sex when under the influence of substances), differences in attitudes and beliefs were found. Those in the high borderline group had higher perceived susceptibility to HIV, greater HIV risk-related knowledge, less favorable sexual and condom attitudes, lower sexual self and response efficacy and less favorable behavioral intentions, than those in the low borderline symptom group.
Both of the McMahon et al. (2007) and the Devieux et al. (2009) adolescent studies suggest that adolescent personality is meaningfully linked with HIV risk-relevant attitudes, knowledge, beliefs and expectancies. These relationships may signal important vulnerabilities to future risk behaviors as adolescents mature and establish more frequently enacted patterns of sexual behavior.

Other Explanations for Null Findings

Perhaps personality styles were not associated with indicators of HIV risk behavior because the predictors of adolescent sexuality may be different than those of adult sexuality. Although previous literature has provided some evidence that personality is a predictor of adult sexual behavior, the few available studies of personality and adolescent sexual behavior have not yielded much. Other factors, such as environmental variables (i.e. social/contextual, family influences, etc.) may be more important predictors of risk.

Both person and environmental influences, according to Moos (2002), are powerful determinants of health and wellbeing. In the current investigation, direct effects of personality on HIV risk behavior were examined and age, ethnicity, gender, drug use variables, were included as potential confounds and controlled for in the analyses. However, other potentially meaningful social, contextual, family, and biological influences were not accounted for. Many correlates of adolescent sexual behavior have garnered attention from researchers. Older age (Niyonsenga & Hlaing, 2007), peer group norms related to promiscuous sexual behavior (DiClemente, 1991; Romer et al., 1994, Whitaker & Miller, 2000), reduced parental involvement (Whitaker & Miller, 2000) and
early onset of puberty (Udry, Billy, Morris, Groff, & Raj, 1985; Udry, Talbert, & Morris, 1986) have all been linked to increased sexual risk behavior.

Although personality variables may not have had main effects on HIV risk behavior in this study, it is possible that such variables interact meaningfully with contextual or environmental variables to influence risk behavior. The current study did not examine the interactive effects of personality and contextual factors because clarity about the direct effects of personality on HIV risk behavior among adolescents, based on existing literature, was still elusive. However the lack of findings in this study may warrant future research that adequately assesses such factors and interactions.

Additionally, though there were no significant direct effects between personality styles and HIV risk behavior, it is possible that interactions among the styles may be predictive of HIV risk behavior. In a number of cluster analytic studies, subgroups defined based on multiple correlated and independent personality dimensions of personality have demonstrated relationships to HIV risk-related attitudes and behaviors. However, it is often unclear whether the multiple personality factors that define high risk clusters contribute to risk through additive or interactive effects. Further, it is unclear which specific dimensions of personality psychopathology may be driving risk behavior.

A study by McMahon, Malow, Devieux, Rosenberg, & Jennings (2008) investigated the association between level of personality pathology and HIV risk-related attitudes, beliefs, and behaviors among a sample of substance abusing, comorbid adults attending day and residential mental health treatment programs. Personality pathology was assessed using the Millon Clinical Multiaxial Inventory (MCMI-III), and three clusters emerged, best defined by high, medium, and low MCMI-III psychopathology.
subgroups. The high psychopathology group demonstrated significantly less knowledge about HIV and AIDS and less anxiety about HIV infection than the low psychopathology cluster; less sexual self-efficacy than the moderate psychopathology cluster; poorer condom attitudes than the low psychopathology subgroup; and a significantly higher percentage of sex acts unprotected in the past 6 months than the other clusters. It is unclear whether the predictive power of personality psychopathology clusters were a result of additive effects of styles, interactive effects of styles, or both. What seems clear from relationships between HIV risk behavior and clusters formed on the basis of multiple correlated and independent scales is that the co-occurrence of personality styles is worthy of more attention.

It remains to be seen whether interactions among the personality styles may yield more than the null findings of the direct effects, and whether interactions may serve to magnify or moderate risk. It is possible that interactions among orthogonal dimensions of personality such as internalizing x externalizing (see Achenbach, 1978) or interactions among styles of differing DSM-IV clusters of personality (i.e. cluster A: odd/eccentric, cluster B: dramatic/emotional/erratic, or cluster C: anxious/fearful; APA, 2000) could yield the most interesting findings. Within the group of young offenders, the special case of externalizing-internalizing comorbidity is one that has received some attention from researchers. This group of individuals is simultaneously acting out and acting inward—they are disruptive and offending, as well as experiencing a great deal of negative affect. High levels of both internalizing and externalizing could result in poor outcomes, as these individuals, exhibiting both broad classifications of symptoms, may be the most disturbed. The conflict between acting out and acting inward, may indicate, as Millon and
Davis (1996) discuss, that this type of individual is in constant turmoil having yet to find a stable adaptation strategy.

Previous studies addressing interactions between internalizing and externalizing psychopathology and their impact of various criterion variables have yielded mixed findings. It has been indicated that the interaction between internalizing and externalizing axis I dimensions among juvenile offenders has been associated with increased sexual risk behavior (Brown et al., 2010), increased alcohol abuse (Evans & Frank, 2004), more behavioral, social, and attention problems (Langley et al., 2010), and worse substance use treatment outcome (Rowe et al., 2004). However, others have failed to find any relationships between these types of interactions and treatment outcomes among adolescents (Shane, Jasiukaitis, and Green, 2003; DeDios, 2007). More remains to be learned about the interactive effects of personality styles on important clinical outcomes. Future research in this area may be valuable.

General Limitations and Suggestions for Future Research

The high attrition rate, unfortunately typical in studies involving adolescent substance abusing samples, was an important limitation of this study. The number of adolescents that were lost to follow up in this study (more than 50% of the original sample) is troublesome. Although no significant differences were found between completers and non-completers in the attrition analysis, the high attrition rate raises suspicion about the composition of the sample, and about the generalizability of the findings. The substantial loss of subjects to follow-up undoubtedly impacted the power of the analyses, and may have led to the creation of a biased or skewed sample of individuals, as completers may arguably be qualitatively different from non-completers in
some way that was not discernable in the attrition analysis. It is unclear whether findings from this study would differ if a greater number of participants returned for the follow-up assessment. Future studies might benefit from incorporating creative retention strategies, specifically targeted to adolescent substance abusing populations in order to reduce attrition (Liddle et al., 2006; Alvarez, et al., 2006; Meyers et al., 2003).

Another important limitation of this study was the use of self-report instruments for the measurement of the predictor and criterion variables. A review of validity issues with sexual risk behavior assessment (Malow, Gustman, Ziskind, McMahon, & St. Lawrence, 1998) highlighted the difficulties with self-report data. The authors contend that self-report of sexual risk behavior may be especially problematic when considering drug abusers, adolescents, and those involved in the criminal justice system. Validity coefficients for adolescent offenders’ self reported drug use are among the lowest when compared to other populations (Fendrich and Xu, 1994; Feucht et al., 1994; Magura & Kang, 1996, 1997).

To encourage validity of self-report in the current study, interviewers were trained to interact with participants from a nonjudgmental stance, in order to establish rapport and build trust. Participants were encouraged to respond accurately and were informed that their responses were confidential. A number of strategies, such as calendar-based methodology, were implemented to increase accurate recall in the current study. In spite of these efforts, a number of factors may contribute to the questionable validity of self-report data, including lack of insight, perceptual distortions, intentional or unintentional misrepresentation, variables associated with transitory drug effects (e.g., withdrawal), changing mood states, variations in retrospective reporting durations, role expectations,
or demand characteristics associated with the research environment (Malow et al. (1998); Uddo-Crane, Malow, & Sutker, 1994).

Schroder, Carey, & Vanable (2003) highlight a number of other concerns with respect to the accuracy of self-report of sexual risk behavior. First, the authors stress the cognitive demands that accompany recall tasks, and the likelihood of memory error as a central challenge of self-report assessments. According to the Schroder et al. (2003), frequency reports are most vulnerable to memory error, as compared to incidence reports which inquire in dichotomies (i.e. yes/no). Second, the influence of social desirability may result in under-reporting or over-reporting sexual behavior to avoid shame, embarrassment, and/or to conform to peer group norms.

In regard to personality self-report assessment procedures, such as the MACI, ‘faking good’ may impact responses. Adolescents in court-mandated treatment may be fearful that assessment information may be used for purposes other than the study, and may bias their responses toward lesser personality psychopathology. Moreover, some personality styles may be difficult to assess. For instance, unruly individuals, often characterized as deceitful, may not be responding in a straightforward and truthful manner especially if they lack trust in those conducting the assessment.

**Adolescent Personality and HIV Risk Behavior: Future Considerations**

The current investigation allowed for examination of the direct associations between four personality styles and HIV risk behavior. Given the scarcity of research in this area, the research questions posed were purposely parsimonious and focused. However, many questions remain to be addressed in future studies. Further research addressing the linkages between personality and HIV risk behavior, especially among
substance abusing youth and other at-risk groups, is needed. One area that warrants exploration is the manner in which adolescent personality may interact with social contextual variables to predict risk behavior. Future studies might consider social, familial, and contextual variables as predictors of risk, and examination of interactions between these situational/contextual variables and personality styles may yield findings that may better account for differences in HIV risk behavior.

As per the findings from prior studies pointing to the positive relationship between some dimensions of personality and HIV risk related attitudes, beliefs and expectancies, further research is warranted. Longitudinal studies are necessary in order to determine whether relationships between personality and risk-relevant attitudes in adolescence develop into troublesome personality–risk behavior relationships over time. If such relationships were identified, personality sensitive prevention interventions might be developed for those at greatest risk.

Future studies may also attempt to address the question of how these personality styles may interact with one another to predict risk behavior. Interactions among the styles may more meaningfully predict risk than isolated pure styles, and may carry more validity, as rarely do pure types exist in nature. Future research might focus on the influence that interactions among styles may have on HIV risk behavior, as what occurs in the interaction of these personality styles may be greater than simple additive effects. Exploring interactions among orthogonal styles would be a reasonable place to start.

Another approach may be to explore narrow band personality dimensions, as opposed to broad band personality dimensions, as studies examining specific characteristics have yielded some interesting findings. The trait of impulsivity has been
associated with increased sex risk behavior among borderline (Kelly et al., 1992; Chen, Brown, Lo, & Linehan, 2007) and antisocial individuals (Golding & Perkins, 1996). Other studies have linked HIV risk behavior to traits of sensation-seeking (Kalichman, Weinhardt, DiFonzo, Austin & Luke, 2002), and low agreeableness (Zuckerman & Kuhlman, 2000), among others. Continued exploration of narrow band personality dimensions, and interactions among those dimensions, could foster greater understanding of possible person-based drivers of sexual risk behavior.

Finally, the current diagnostic categorical classification system has been the target of much criticism and dispute. Problems related to personality disorder comorbidity, heterogeneity, and arbitrary distinctions between normal presentations and disordered presentations have been highlighted (Widiger & Clark, 2000; Watson & Clark, 2006; Widiger, 2007). Dimensional perspectives of mental health and illness have been proposed to address the shortcomings of the current taxonomy. Future studies employing a dimensional view of personality are encouraged in order to take advantage of the benefits of continuous measurement, such as the maximization of valuable clinical information, and the ability to ascertain individual differences in severity among those demonstrating the same personality style (Widiger & Samuel, 2005). As we move toward DSM-V, more studies employing a dimensional view of personality are warranted.
### Table A1. Participant Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Intent to Treat (n=258)</th>
<th>Non-Completers (n=131)</th>
<th>Completers (n=127)</th>
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<td><strong>RACE/ETHNICITY (%)</strong></td>
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### Table A2. Descriptive Statistics for Predictor and Criterion Variables

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<th>Completers (n=127)</th>
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<td>MACI Unruly scale</td>
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<tr>
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<tr>
<td>(SD)</td>
<td>(5.75)</td>
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<tr>
<td>MACI Submissive scale</td>
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<tr>
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<td><strong>SEXUAL RISK (last 3 months)</strong></td>
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<td>(SD)</td>
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<td>Kurtosis</td>
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Table A3. Correlations among Predictors and Criterion Variables

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<td>Unruly</td>
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<td>.257*</td>
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<td>-.287**</td>
<td>.000</td>
<td>-.297*</td>
<td>-.029</td>
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<td></td>
<td></td>
<td></td>
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<td>6 % Unprotected Sex Acts</td>
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<td>.311**</td>
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<td>7 F/U # of Partners</td>
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<td>8 F/U % Unprotected Sex Acts</td>
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* p < .05; ** p < .01
## Tables- Supplemental Analyses

### Table A4. Baseline # of Unprotected Sex Acts and Unruly Personality Style

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<th>$\beta$</th>
<th>$t$</th>
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### Table A5. Baseline # of Unprotected Sex Acts and Submissive Personality Style

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### Table A6. Baseline # of Unprotected Sex Acts and Inhibited Personality Style

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### Tables - Supplemental Analyses cont.

#### Table A8. Follow-up # of Unprotected Sex Acts and Unruly Personality Style

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#### Table A9. Follow-up # of Unprotected Sex Acts and Submissive Personality Style

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#### Table A11. Follow-up # of Unprotected Sex Acts and Borderline Personality Style

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### Tables- Predictor Variable Distributions

#### Table A12. Skew and Kurtosis of Predictor and Criterion Variables

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#### Table A13. Predictor Variable Ranges and Prototypal Item Response Distribution

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*Note: Borderline scale of the MACI does not contain any prototypical items.
References


88


Appendix A. Millon Adolecent Clinical Inventory

Scale 6A: Unruly Scale items

F 2 005. I do my very best not to hurt people's feelings.
F 2 008. I would never use drugs, no matter what.
F 2 009. I always try to do what is proper.
F 2 015. I've never done anything for which I could have been arrested.
T 2 018. I usually act quickly without thinking.
T 3 021. Punishment never stopped me from doing whatever I wanted.
F 2 023. I like to follow instructions and do what others expect of me.
T 2 028. I sometimes scare other kids to get them to do what I want.
T 3 039. I don't care much what other kids think of me.
T 2 041. I don't mind telling people something they won't like hearing.
T 2 044. As soon as I get the impulse to do something, I act on it.
F 2 045. I've never been called a juvenile delinquent.
F 1 051. I don't think I have as much interest in sex as others my age.
T 1 052. I don’t see anything wrong with using others to get what I want.
T 2 057. I can hold my beer or liquor better than most of my friends.
T 3 058. Parents and teachers are too hard on kids who don't follow rules.
T 1 059. I like to flirt a lot.
T 2 068. I think I have a good body.
T 2 073. I'm no different from lots of kids who steal things now and then.
T 3 076. Too many rules get in the way of my doing what I want.
T 2 077. When things get boring I like to stir up some excitement.
F 1 084. I sometimes feel very unhappy with who I am.
T 3 092. I'm very good at making up excuses to get out of trouble.
F 2 093. It is very important that children learn to respect their elders.
F 1 096. We should respect our elders and not think we know better.
F 1 099. I don't think people see me as an attractive person.
T 2 104. If I want to do something, I just do it without thinking of what might happen.
T 2 111. I've had a few run-ins with the law.
F 1 116. Thinking about sex confuses me much of the time.
T 3 117. I do what I want without worrying about its effects on others.
T 1 120. There have been times when I could not get through the day without some pot.
F 2 132. I often get frightened when I think of the things I have to do.
T 1 135. I can charm people into giving me almost anything I want.
T 2 143. I am glad that feelings about sex have become a part of my life now.
T 3 148. My parents have a hard time keeping me in line.
T 2 149. When I don't get my way, I quickly lose my temper.
T 1 150. I often have fun doing certain unlawful things.
T 1 152. When we're having a good time, my friends and I can get pretty drunk.
T 3 155. Telling lies is a pretty normal thing to do.
Appendix A. cont. Millon Adolecent Clinical Inventory

Scale 3: Submissive Scale Items

T 2 006. I can depend on my parents to be understanding of me.
T 1 093. It is very important that children learn to obey their elders.
T 2 096. We should respect our elders and not think we know better.
F 1 158. There are times when nobody at home seems to care about me.
F 2 028. I sometimes scare other kids to get them to do what I want.
F 2 041. I don’t mind telling people something they won’t like hearing.
F 2 052. I don’t see anything wrong with using others to get what I want.
F 2 078. I will sometimes do something cruel to make someone unhappy.
F 2 128. I don’t mind pushing people around to show my power.
F 2 157. I enjoy starting fights.
T 3 063. I worry a great deal about being left alone.
T 2 071. I’m a somewhat scared and anxious person.
T 3 109. I get frightened when I think of being all alone in the world.
T 1 132. I often get frightened when I think of the things I have to do.
T 2 005. I do my very best not to hurt other people’s feelings.
T 2 009. I always try to do what is proper.
T 2 023. I like to follow instructions and do what others expect of me.
T 1 130. I try to make everything I do as perfect as possible.
T 3 001. I would rather follow someone than be a leader.
T 2 087. I am very uncomfortable with people unless I am sure they really like me.
T 3 122. I prefer being told what to do rather than having to decide for myself.
T 3 151. I guess I depend too much on others to be helpful to me.
Appendix A. cont. Millon Adolecent Clinical Inventory

Scale 2A: Inhibited Scale Items

F 2 010. I like the way I look.
T 1 013. I seem to have a problem getting along with other teenagers.
F 1 018. I usually act quickly without thinking.
F 2 024. I seem to fit in right away with any group of new kids I meet.
T 1 026. I hate the fact that I don’t have the looks or brains I wish I had.
T 2 031. Most people are better looking than I am.
T 2 035. Most other teenagers don’t seem to like me.
T 2 036. When I have a choice I prefer to do things alone.
T 3 038. I often feel that others do not want to be friendly to me.
T 1 051. I don’t think I have as much interest in sex as others my age.
F 2 059. I like to flirt a lot.
F 1 062. I enjoy thinking about sex.
T 2 064. I often feel sad and unloved.
F 1 068. I think I have a good body.
T 2 069. I feel left out of things socially.
F 2 070. I made friends easily.
T 3 071. I’m a somewhat scared and anxious person.
F 1 077. When things get boring, I like to stir up some excitement.
T 2 080. I often feel I’m not worthy of the nice things in my life.
T 2 084. I sometimes feel very unhappy with who I am.
T 1 085. I don’t seem to enjoy being with people.
T 3 087. I am very uncomfortable with people unless I am sure they really like me.
T 3 099. I don’t think people see me as an attractive person.
T 1 100. Socially I’m a loner and I don’t mind it.
T 3 106. I won’t get close to people because I’m afraid they may make fun of me.
T 1 116. Thinking about sex confused me much of the time.
F 2 117. I do what I want without worrying about its effects on others.
T 2 119. Others my age never seem to call me to get together with them.
T 3 127. There are times I wish I was someone else.
T 2 140. I don’t like being the person I’ve become.
T 3 142. Although I want to have friends I have almost none
F 2 143. I am glad that feelings about sex have become part of my life now.
F 2 149. When I don’t get my way I quickly lose my temper.
T 2 153. I feel lonely and empty most of the time.
Appendix A. cont. Millon Adolescent Clinical Inventory

Scale 9: Borderline Tendency Scale Items

F 2 002. I'm pretty sure I know who I am and what I want in life.
T 2 004. I often resent doing things others expect of me.
T 2 018. I usually act quickly without thinking.
T 2 034. I often feel as if I am floating around, sort of lost in life.
T 2 044. As soon as I get the impulse to do something, I act on it.
T 2 054. I sometimes get so upset that I want to hurt myself seriously.
T 2 063. I worry a great deal about being left alone.
T 2 064. I often feel sad and unloved.
T 1 078. I will sometimes do something cruel to make someone unhappy.
T 2 084. I sometimes feel very unhappy with who I am.
T 2 088. Killing myself may be the easiest way of solving my problems.
T 2 104. If I want to do something, I just do it without thinking of what might happen.
T 2 107. More and more often I have thought of ending my life.
T 2 115. Other people my age seem more sure than I am of who they are and what they want.
T 2 117. I do what I want without worrying about its effects on others.
T 1 121. I make my life worse than it has to be.
T 2 141. I seem to make a mess of the good things that come my way.
F 2 145. I'm very mature for my age and know what I want to do in life.
T 2 149. When I don't get my way, I quickly lose my temper.
T 2 153. I feel lonely and empty most of the time.
T 2 154. I feel pretty aimless and don't know where I'm going.
Appendix B. Risk Behavior Assessment (RBA)- Adapted

The next set of questions asks about your sex behavior. In order to develop HIV prevention programs that can help others, it is extremely important that you be honest and truthful. Remember, your name does not appear anywhere on this survey, so we do not know your name. Please answer these questions honestly to the best of your knowledge. For each question, “having sex” means vaginal, anal (sex in the butt) or oral sex (one person goes down on the other).

Do not write N/A, write “0.”

Please answer the following questions about the last person you had sex with.

1. Was the person a: ______ man or ______ woman?

2. How many days ago did you last have sex? _______ days ago

3. How many times have you had sex with this person before? _______ times

4. How well did you feel you knew the person before having sex this last time?

Please circle one choice:

1. Did not know at all
2. Knew slightly
3. Acquainted
4. Knew well
5. Knew very well
6. Long term companion and partner

(USE CALENDAR)

Say the following: “Please tell me how many times you have done each of the following during the past 3(6) months.”

1. Vaginal sex without latex condoms (rubbers). 3 months / 6 months

2. Vaginal sex with latex condoms (rubbers). __________ / __________

3. Anal sex (sex in the butt) with latex condoms. __________ / __________

4. Anal sex (sex in the butt) without latex condoms. __________ / __________

5. Oral sex (partner did it to you) without a condom or __________ / __________
Appendix B. cont. Risk Behavior Assessment (RBA)- Adapted

dental dam.

6. Oral sex (partner did it to you) with a condom or dental dam.

7. Oral sex (you did it to partner) without a condom or dental dam.

8. Oral sex (you did it to partner) with condom or dental dam.

9. Been intimate with a partner (body rubbing) without penetration.

10. How many men have you had sexual relations with?

11. How many women have you had sexual relations with?

12. How many times have you shared a needle to inject (shoot-up) drugs?

13. How many times have you had a sex partner you think used a needle to shoot-up drugs?

14. Have you had sex with a man who has had sex with other men?

15. How many times have you had sex with a someone after you had too much to drink?

16. How many times have you had sex with a person when you were high on drugs?

17. How many times have you refused to have sex with someone?

18. How many times has someone forced you to have sex when you didn’t want to?
Appendix C. IRB Approval Letter from Human Subjects Research Office

March 18, 2010

Stephanie Diamond, MA
University of Miami
Department of Counseling Psychology
Coral Gable Campus, Locator

STUDY TITLE: Personality Style, HIV Risk Behavior, and Response to an HIV Prevention Intervention Among Adolescent Substance Abusers.

IRB ACTION DATE: 03/18/10

On March 18, 2010, an IRB Administrative Designee reviewed the information you provided to the Human Subject Research Office (HSRO) and determined that your project does not constitute human subject research. Based on the information submitted for review, you only plan to analyze de-identified data which does not contain any of the 18 specific identifiers noted in the privacy Rule. As such, it is not subject to IRB review under 45 CFR 46.

The materials submitted and considered for review of this project included:
1. Non-Human/Non-Research Determination Application Dated March 18, 2010

This review and determination is based only on the information provided to the HSRO and is not valid if the proposed project is not exactly as described, or if additional information (including grants, contracts or other information) have been withheld.

The HSRO must be notified if the proposed activity changes and becomes research. Research involving human subjects must receive IRB review and approval prior to implementation.

If you have any questions, please call the HSRO at (305) 243-3195.

Sincerely,

Amanda Coltes-Rojas, MPH, CIP
Director, Regulatory Affairs & Educational Initiatives

cc: IRB file