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UNIVERSITY OF CALIFORNIA,
IRVINE

Psychopathy in the Transition to Adulthood: Subtypes, Stability, and Offending

DISSERTATION

submitted in partial satisfaction of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

in Psychology and Social Behavior

by

Joseph R. Tatar II

Dissertation Committee:
Professor Elizabeth Cauffman, Co-Chair
Professor Jennifer L. Skeem, Co-Chair
Professor JoAnn Prause

2014

DEDICATION

This project is dedicated to my family, my friends, and my girlfriend. My parents have always encouraged me to pursue whatever path I chose, and though they may, at times, have come across as overzealous in their attempts, they have always pushed me to do my best at any task I apply myself to. As for my brother, Andy, he once told me that I had the potential to be one of the most successful members of our family. And though, at the time, I balked at the pressure of such expectations, his and the rest of my family's unwavering support has helped me push through my failures and strive to make them all proud of my accomplishments. My friends—too many of whom to name here, but you know who you are—have helped me to navigate the most stressful and difficult times of my life and brightened my spirits and resolve along the way, and I thank you all for that. Finally, I dedicate this to Raquel. Though I began this project before we had met, I do not think I could have finished this without your ability to help me maintain my sanity, your capacity to bring me joy no matter the occasion, and the way you consistently remind me that I'm good enough to succeed at what I set my mind to. All of you helped make this possible. Thank you all. I love each and every one of you.

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ABSTRACT OF THE DISSERTATION

Psychopathy in the Transition to Adulthood: Subtypes, Stability, and Offending

By

Joseph R. Tatar II

Doctor of Philosophy in Psychology and Social Behavior

University of California, Irvine, 2014

Professor Elizabeth Cauffman, Co-chair

Professor Jennifer Skeem, Co-chair

Objective: The purpose of this dissertation is two-fold. First, this project examines instability in psychopathic traits from adolescence to adulthood. The second goal is to examine how well psychopathic traits, assessed in adolescence, predict short- and long-term offending. Specific attention is paid to differences in stability and antisocial behavior between youth measured to be high and low in psychopathic traits as well as between psychopathy subtypes. **Method:** The first study uses various methods to assess personality stability (e.g. rank-order, mean-level, individual-level, ipsative, and predictive stability) to examine the potential for change in psychopathic traits from adolescence to adulthood. The second study addresses how well adolescent assessments of psychopathic traits predict risk for short- and long-term offending and aggression. Both studies examine a sample of former male juvenile offenders ($n = 355$) who completed a follow-up assessment within prison institutions or in the community ($n = 94$) six to eight years later. **Results:** The dissertation produced two key findings. First, the results revealed low-to-moderate stability in psychopathic traits from adolescence to adulthood, but stability estimates were particularly poor for youth that were high in psychopathy. Second, findings indicated that adolescent psychopathic traits performed quite well in identifying

enhanced risk for offending and aggression in the short-term, but do not provide meaningful long-term predictive utility (between 6 and 8 years later) for antisocial behavior in adulthood. Measured changes in psychopathic traits over time appeared to be better suited for long-term prediction. **Conclusion:** Psychopathic traits are generally unstable across the transition to adulthood, particularly for youth high in levels of psychopathy. Characteristics associated with secondary psychopathy may exacerbate changes in psychopathic traits over time. In addition, the limited stability of these traits likely contributed to the poor long-term predictive utility for adolescent features of psychopathy on adult offending. Thus, the use of these assessments in forensic and legal practice to inform decisions regarding denial of treatment, harsher sentencing, and waiver to criminal court may not be appropriate applications of adolescent psychopathy measurement. Multiple assessments of psychopathy over time may also provide a stronger, dynamic picture of risk change over time.

Chapter 1:

Overview

Psychopathy has been conceptualized as a personality disorder characterized by such traits as superficial charm, pathologic egocentricity, untruthfulness and insincerity, and lack of remorse or shame (Cleckley, 1941). Since this seminal work, theory and research examining the pathology, course, and consequences of psychopathic characteristics have proliferated (Edens, Skeem, Cruise, & Cauffman, 2001; Hart & Hare, 1996; Millon, Simonsen, & Birket-Smith, 2002; Salekin & Lynam, 2010). In addition, psychopathic features have been examined in a number of different contexts including psychiatric inpatients (e.g. Douglas, Ogloff, Nicholls, & Grant, 1999; Nolan, Czobor, Roy, Platt, Shope, et al., 2003)—the population for which the disorder was originally conceptualized (Cleckley, 1941)—and more normative samples, such as college students (e.g. Lynam, Whiteside, & Jones, 1999; Williams, Paulhus, & Hare, 2007) and working professionals in careers where psychopathic traits may be associated with success (e.g. Andrews & Francis-Smythe, 2010; Babiak & Hare, 2006). However, no other setting to which psychopathy has been applied has received as much theoretical and empirical attention as the adult criminal offender context (e.g. Hart, Forth, & Hare, 1990; Newman, Kosson, & Patterson, 1992; Patrick, Hicks, Krueger, & Lang, 2008; Skeem, Johansson, Andershed, Kerr, & Eno Louden, 2007). This interest is directly attributable for the apparent connection between psychopathic characteristics, criminal offending, and violence (see Skeem & Cooke, 2010). With this in mind, recent research attention has also been devoted to examining psychopathy and its correlates in younger populations—particularly adolescents—with the idealized intention of identifying youth in need of early intervention to reduce future risk (see Edens, et al., 2001; Frick, 2002; Seagrave & Grisso, 2002).

Indeed, a wealth of research has examined and commonly observed a positive relation between these measures and risk for violence and other offending in both adults and adolescents (for reviews, see Edens et al., 2001; Forth & Book, 2010; Vincent, 2006; White & Frick, 2010). Given their utility in predicting short-term violence, measures of juvenile psychopathy have become more commonly used with juvenile offenders to help determine issues relating to violence risk and treatment amenability (Viljoen et al., 2010). However, there is a debate about the appropriateness of using “juvenile psychopathy” measures to inform legal decisions for youth due to the fact that waiver to adult court and denial of treatment that may have significant long-term consequences for youth (Seagrave & Grisso, 2002). In addition, these measures have been applied to youth without a full consideration of the developmental differences in the relative permanence of personality and behavior, psychosocial maturity, and the importance of the greater interpersonal context between adolescents and adults (see Edens & Vincent, 2008; Hart, Watt, & Vincent; Seagrave & Grisso, 2002; Skeem & Cauffman, 2003; Tatar, Malnove, Hadinata, Velazquez, & Cauffman, 2011).

This issue becomes even more salient as research has begun to identify heterogeneity within youth offenders who score highly on measures of psychopathy (e.g. Kimonis, Skeem, Cauffman, & Dmitrieva, 2010; Tatar, Cauffman, Kimonis, & Skeem, 2012), revealing two variants of psychopathy (primary and secondary) that show different deficits and environmental vulnerabilities. One subtype in particular, secondary psychopathy, may be more influenced by contextual features (see Karpman, 1948a, 1955; Mealey, 1995; Porter, 1996) and presents with more pronounced difficulties with impulsivity and neuroticism that show less permanence from adolescence to adulthood (Blonigen, Hicks, Krueger, Patrick, & Iacono, 2006; Roberts, Caspi, & Moffitt, 2001). Therefore, the present study has been designed to address the issue of adolescent

psychopathy more closely by examining differences in distal outcomes between youth high and low in psychopathy and between psychopathy subtypes as they make the transition to adulthood. The first study examines whether or not psychopathic traits show stability from adolescence to adulthood in a sample of formerly incarcerated juvenile offenders. The intention is to determine the overall degree of stability over time as well as whether youth high and low in psychopathy and whether adolescent psychopathy subtypes show any differences in trait stability in the transition to adulthood. The second study is designed to test whether or not differences in short- and long-term risk for offending and aggression can be observed between youth high and low in psychopathy and between youth with primary and secondary psychopathy. This will be accomplished examining levels and change in delinquency and aggression while incarcerated and likelihood of antisocial behavior in adulthood.

Chapter 2:

Psychopathy in the Transition to Adulthood: Subtypes, Stability, and Offending

Abstract

Objective: This study investigates the overall stability of psychopathic traits from adolescence to adulthood. Comparisons are made between youth high and low in psychopathy as well as between psychopathy subtypes. **Method:** Employing various methods to assess personality stability (e.g. rank-order, mean-level, individual-level, ipsative, and predictive stability), this study investigates the potential for change in psychopathic traits from adolescence (ages 14-17) to adulthood (ages 21-26) in a sample of former male juvenile offenders either within prison institutions or in the community as adults ($n = 94$). **Results:** This study obtains three main findings. First, psychopathic traits generally presented low-to-moderate stability over an average of 7 years and showed decreases in the levels of these traits over time, particularly with regard to Affective features (e.g. callousness and unemotionality). Second, youth who scored above the “diagnostic” cut off during adolescence tended to exhibit worse stability of psychopathic traits from adolescence to adulthood than youth who scored below this cut-off. Finally, though psychopathy subtypes did not meaningfully differ in their trait stability, characteristics associated with secondary psychopathy (e.g. anxiety/neuroticism and victimization) produced sharper decreases (from anxiety) or produced less change (from victimization) in psychopathy levels over time. **Conclusion:** Psychopathic traits show more instability from adolescence to adulthood than is acceptable, given the use of psychopathic traits in informing sentencing and waiver decisions. This instability is particularly apparent for youth high in levels of psychopathy, which is the target population of psychopathy assessment practices. Characteristics associated with secondary psychopathy appear to amplify these changes. Practitioners and legal authorities

should consider the developmental instability of psychopathic traits when applying assessments of psychopathy to juvenile offender populations.

Psychopathy Measures Have Been Extended Directly Downward from Adults to Adolescents

In recent years, researchers and practitioners have shown increasing interest in examining adolescent forms of psychopathy, in part because of their utility in predicting aggressive and violent behavior and concerns about preventative efforts geared toward violence reduction (Edens et al., 2001). As a result, there has been a proliferation of psychopathy measures targeting youth in recent years, such as the Psychopathy Checklist: Youth Version (PCL:YV; Forth, Kosson, & Hare, 2003), the Antisocial Process Screening Device (APSD; Frick & Hare, 2001), and the Childhood Psychopathy Scale (Lynam, 1997). However, these measures have directly extended the adult construct of psychopathy downward to youth, as evidenced by the fact that these measures were derived directly from the leading measure of adult psychopathy, the Psychopathy Checklist-Revised (PCL-R; Hare, 2003). For instance, the 20 items of the PCL-YV were minimally altered from the 20 items of the PCL-R to be more “developmentally appropriate” (Forth et al., 2003). Items such as “many short-term marital relationships” and “parasitic lifestyle” were adjusted to account for the limited, relatively shorter opportunity juveniles had to express such life histories. As most youth are unlikely to have been married by the time of assessment, the former item was altered to “unstable interpersonal relationships”, allowing for extrafamilial relationships that may or may not be romantic to also be used to identify youth’s unwillingness to maintain interpersonal relationships over long periods of time. The latter item was renamed “parasitic orientation”, and instead of focusing mainly on work history and financially supporting oneself (as many are likely supported financially by parents), the item gauges reliance on others to fulfill their household (e.g. chores), school, work or social

commitments (e.g. requirements of a team or club) (Forth, et al., 2003). Despite these and other slight alterations, the prevailing assumption is that the overall concepts and diagnostic features of psychopathy as conceptualized in adult populations are similarly attributable to and present in children and adolescents.

The problem is that the population from which the PCL-R was originally developed and validated was adult criminal offenders (Hare, 2003). This is important, as researchers have questioned the connection between psychopathic traits and criminal/delinquent behavior as conceptualized through the Psychopathy Checklist series (see Skeem & Cooke, 2010). Specifically, the concern is that psychopathic characteristics were originally conceptualized to be a cluster of personality traits (Cleckley, 1941) and not a series of behaviors. In fact, Cleckley suggests that engagement in criminal behavior represented a very small subset of individuals meeting the diagnostic features of psychopathy. Therefore, another measure, the Youth Psychopathic Traits Inventory (YPI; Andershed, Kerr, Stattin, & Levander, 2002), was developed to assess the personality features of psychopathy among adolescents independently of antisocial and criminal behavior. According to the authors,

“characteristics such as promiscuous sexual behavior, criminal versatility, and many short-term relationships, seem to be more behavioural consequences of psychopathic personality traits such as shallow affect, lack of empathy, lying, impulsivity and sensation-seeking, than core traits of the psychopathic personality constellation” (p. 135)

As a result, the YPI includes a series of self-report items for each component of the core affective (callousness, unemotionality, and remorselessness), interpersonal (dishonest charm, grandiosity, lying, and manipulation), and lifestyle features (impulsivity, thrill-seeking, irresponsibility) of the psychopathic personality construct. The items were designed to avoid tempting respondents to lie by wording them in a way that would not frame the assessed characteristics as deficits, circumventing the deceitful and manipulative interpersonal features of

individuals with psychopathy. With these improvements over the Psychopathy Checklist series, the YPI appears to be a more suitable measure for assessing the central components of the psychopathy amongst adolescents. However, while the items tap psychopathy with language seemingly appropriate to youth (e.g. “I often don't/didn't have my school or work assignments done on time”), these components of the psychopathy construct as measured by the YPI again reflect a ‘downward extension’ of these features to children and adolescents from Cleckley’s (1976) conceptualization of the disorder, which was derived from adult samples.

This practice of applying adult psychopathic personality features to younger age groups has sparked a lively debate in the literature as to the utility in assessing and validity of the construct amongst youth (Edens & Vincent, 2008; Hart, et al., 2002; Seagrave & Grisso, 2002; Skeem & Cauffman, 2003 compared to Frick, 2002; Lynam, 2002; Salekin, Rosenbaum, Lee, & Lester, 2009). The central divide between both sides of the debate relates to whether or not the adult psychopathy construct is “developmentally appropriate” for youth, considering the normative changes that accompany youth’s transition from adolescence to young adulthood. The central arguments of this division will be addressed in the next section.

This Downward Extension May be Developmentally Inappropriate

Scholars on both sides of the debate seem to agree that something that *looks like* psychopathy can be reliably assessed amongst children and adolescents (Edens & Vincent, 2008; Frick, 2002; Hart, et al., 2002; Lynam, 2002; Salekin et al., 2009; Seagrave & Grisso, 2002). That is, measures of juvenile psychopathy often relate to other variables in a theoretically coherent manner that is consistent with patterns observed for adults (Salekin, Rosenbaum, & Lee, 2008; Lynam & Gudonis, 2005). For instance, although these measures are more strongly associated with measures of anxiety and negative affect than they should be (for a review, see

Sevecke & Kosson, 2010), measures of juvenile psychopathy relate to measures of general personality and deficits in punishment processing and inhibition in a pattern that is similar to adults (Lynam & Gudonis, 2005). For example, in a study of community male youth ($n = 306$), Vitale and colleagues (2005) found that youth high in psychopathic traits and low in anxious traits exhibited similar difficulties in passive avoidance learning (inhibiting behavior in response to learning) and response modulation (shifting from a dominant response set to process contextual information) on a Stroop laboratory task to deficits observed in adult psychopathic offenders (Hiatt, Schmitt, & Newman, 2004; Newman, Schmitt, & Voss, 1997).

Scholars disagree, however, on whether what we are capturing with these measures is, in fact, psychopathy, a personality disorder that will remain relatively stable into adulthood. On one side of the debate, some scholars have argued that it may be developmentally inappropriate to assess psychopathy during adolescence (Edens & Vincent, 2008; Hart et al., 2002; Seagrave & Grisso, 2002; Skeem & Cauffman, 2003). For instance, scholars observe that some features that signify psychopathy in adulthood (e.g., irresponsibility, impulsivity, poor behavioral controls, stimulation seeking, and criminal behavior) may also be viewed as normative and temporary characteristics of adolescence (see Hart et al., 2002; Seagrave & Grisso, 2002; Skeem & Cauffman, 2003). These scholars suggest that, in this example, the downward extension fails to account for the developmental psychopathology principle of *heterotypic continuity*, which holds that the expression of a trait or a meaning of a behavior may change across the lifespan (Cicchetti & Rogosch, 1996). Simply extending adult features of psychopathy to adolescents implies that these traits function similarly across discrete developmental periods, an assumption that these scholars suggest is erroneous (Edens & Vincent, 2008; Hart et al., 2002). As a result, measures of juvenile psychopathy, which include such features, may misclassify a

disproportionate number of youth as psychopathic (Edens et al., 2001; Hart et al., 2002; Seagrave & Grisso, 2002). This misclassification is of grave importance to this population, as measures of juvenile psychopathy have been increasingly used to inform determinations of dangerousness and lack of treatment response within the juvenile justice system (e.g. Viljoen, et al., 2010). The concern is that scores on a single measure of traits that may be transient amongst the juvenile population can have an important impact on punitive judicial decisions and denial of treatment (Jones & Cauffman, 2008; Seagrave & Grisso, 2002).

Researchers have also raised concerns about the stability of juvenile psychopathy across the life course, indicating that some youth may “grow out of” such psychopathic features as impulsive and delinquent behavior as they make the transition to adulthood (Cleckley, 1941; Seagrave & Grisso, 2002). Indeed, even the original conceptualization of psychopathy proffered by Cleckley (1976) cautioned for restraint when applying psychopathic traits to youth:

“Confused manifestations of revolt or self-expression are, as everyone knows, more likely to produce unacceptable behavior during childhood and adolescence than in adult life. Sometimes persistent traits and tendencies of this sort and inadequate emotional responses indicate the picture of the psychopath early in his career. Sometimes, however, the child or the adolescent will for a while behave in a way that would seem scarcely possible to anyone but the true psychopath and later change, becoming a normal and useful member of society.” (p. 270)

Cleckley (1976) goes on to suggest that initial observations of youth presenting with such psychopathic traits should be given the benefit of the doubt until a persistent pattern of behavior across contexts can be established. This concern related to the issue of stability of juvenile psychopathic traits reflects another overlooked developmental psychopathology principle in the “downward extension”: *multifinality* (Hart, et al., 2002). Specifically, multifinality stresses the idea that what may appear to be an adolescent form of psychopathy could lead to a multitude of different outcomes in adulthood besides psychopathy. The implication of this principle is that youth scoring highly in psychopathic traits could be just as likely to manifest another form of

disorder in adulthood or show no adult abnormalities as they may be to express the adult features of psychopathy. Put another way, though “we can reliably identify something in adolescents that is similar to psychopathy in adults and that is associated with future criminality . . . the problem is that we have no strong or direct evidence the thing we are measuring is actually psychopathy per se, a stable personality disorder that does not dissipate over time” (Vincent & Hart, 2002, p. 157). If youth do not follow the trajectory toward adult psychopathy, their scores on measures of psychopathy may decrease, indicating that the measures were partially tapping construct-irrelevant variance attributable to psychosocial immaturity rather than enduring personality pathology.

Some research is relevant to this concern. For example, using a sample of 160 serious adolescent offenders (ages 14-17), Skeem & Cauffman (2003) examined the association between adolescent measures of psychopathy (specifically, the YPI and PCL-YV) and indices of psychosocial maturity. Overall, their results revealed that both measures showed significant inverse associations with psychosocial maturity. Specifically, total scores on the PCL-YV showed significant negative associations with temperance ($r = -.30$; the ability to control one’s impulses), time perspective ($r = -.18$; the ability to foresee short- and long-term consequences) and social perspective ($r = -.19$; the ability to take other people’s perspectives into account). Total psychopathy scores as assessed by the YPI were not only negatively related to each of these dimensions of psychosocial maturity ($r = -.44$; $r = -.18$; $r = -.18$; respectively), but also produced inverse associations with responsibility ($r = -.22$; self-reliance, identity, and work-orientation) and resistance to peer influence ($r = -.19$; the weight that adolescents invest in others’ opinions). As these features of psychosocial maturity tend to show normative increases as youth transition to adulthood (see Cauffman & Steinberg, 2000), it is also likely that these

developmental changes would lead to overall decreases in psychopathy scores as youth age into adulthood.

On the other side of the debate, scholars have argued that psychopathic features exist amongst youth and as these traits show their roots at early ages, elements of psychopathy can be identified among children and adolescents (Frick, 2002; Lynam, 2002; Lynam & Gudonis, 2005; Salekin et al., 2009). Further, these researchers have highlighted evidence that psychopathy can be reliably distinguished from ‘normal’ adolescent development (Frick, 2002; Lynam & Gudonis, 2005; Salekin et al., 2008). For instance, researchers have also shown that measures of juvenile psychopathy yield similar correlates to that of adults, including low agreeableness and conscientiousness (Lynam & Derefinko, 2004), externalizing problems (Frick, Bodin, & Barry, 2000), and deficits in emotional processing and inhibition (Blair & Coles, 2000; Blair, Colledge, & Mitchell, 2001). In addition, these researchers suggest that there are “clear benefits to studying psychopathy [among adolescents] such as garnering further knowledge about the etiology of psychopathy and the development of prevention and intervention programs” to reduce future risk potential (Salekin, 2006, p. 389).

Lynam (2002) in particular suggests that the concerns regarding the ‘questionable’ stability of psychopathic traits from adolescence to adulthood are overstated. Central to his arguments, Lynam uses basic research in personality to suggest that normative changes in development are generally not strong enough to cloud the assessment of psychopathy among adolescents and its stability into the transition to adulthood. For example, meta-analytic data suggests that moderate-to-large stability coefficients are observed for Five-Factor personality traits across adolescence, in early adulthood, and in mid adulthood (Roberts & DelVecchio, 2000; discussed in more detail below). These findings may suggest that like normative

personality, the most psychopathic youth are likely to be the most psychopathic in adulthood as well. In addition, research examining the correlation between age and personality dimensions suggests this association tends to be small at best (ranging from .08-.23) and little mean-level change is observed in Five Factor Model traits from adolescence to adulthood (McCrae, Costa, Ostendorf, Angleitner, Hrebickova, et al., 2000). These arguments served to reflect an important principle in developmental psychopathology research: a true understanding of abnormal processes requires an understanding of parallel normative processes with which to compare (Cicchetti, 2006). With this in mind, Lynam (2002) concludes that “normative developmental changes do not pose fatal difficulties for the assessment of [abnormal] psychopathic traits in children [and] adolescents” (p. 257).

Other scholars have suggested that some of the assumptions made in arguments against the downward extension of psychopathy to youth (particularly Seagrave & Grisso, 2002) are also inconsistent with a developmental perspective on psychopathology (e.g. Frick, 2002). For example, the detractors of the downward extension hold a blanket assumption that comparable levels of psychopathic trait stability among children and adolescents to that of adults are required to verify its existence in younger developmental stages. However, if this were the case, beliefs regarding the lack of treatability of adult psychopaths would serve to extend this pejorative belief to children and adolescents as well (see Frick, 2002; Salekin, et al., 2008). Instead, the hope should be “that these traits are more changeable earlier in development, and hence less stable, thereby allowing for more effective prevention and treatment” (Frick, 2002; p. 250). Frick (2002) also suggests that some of the concerns regarding unreliability of adolescent psychopathy assessment across situations and raters are not reserved solely for research in the realm of psychopathy. Indeed, parallels may be observed from other forms of psychopathology in

children and youth that are not as hotly debated. For instance, the average correlation between two different informants for other forms of psychopathology also tends to suggest poor situational and rater consistency (Achenbach, McConaughy, & Howell, 1987). Further, the overall stability of nearly all types of childhood psychopathology is usually lower than that found in adults (Wierson & Forehand, 1994). As a result, Frick (2002) echoes the concern raised by Lynam (2002) that research findings in adolescents with psychopathology must put in context with the findings from normative and psychopathology research among youth.

In sum, it appears that both sides of the debate have some empirical support that is grounded in the principles of developmental psychopathology (see Cicchetti, 2006). Ultimately, this debate can only be resolved by longitudinal research that prospectively investigates psychopathic trait stability from childhood into adulthood. However, before examining research that tackles the issue of stability amongst psychopathic traits, it is important first to evaluate how more normative personality features remain stable or change from adolescence to adulthood.

Evidence Suggests that Personality Features in General Show Some Degree of Temporal Stability over Time

Concerns regarding the temporal stability of traits, particularly across the transition from adolescence to adulthood, are not reserved solely for researchers seeking to ascertain the reliability and validity of psychopathic characteristics. A major portion of the research and theory regarding personality features in general focuses on the relative variability or constancy of Five-Factor traits over time (see Roberts & DelVecchio, 2000; Roberts, Walton, & Viechtbauer, 2006). Though researchers and theorists may disagree as the particular period at which personality becomes ‘fully’ crystallized (McCrae, Costa, Ostendorf, Angleitner, Hrebickova, et al., 2000; Lewis, 1999), the bulk of the evidence suggests that whereas trait consistency within discrete developmental periods are somewhat high, periods reflecting developmental transitions

show somewhat less personality stability (Fraley & Roberts, 2005; Roberts & DelVecchio, 2000; Roberts et al., 2006). In addition, personality features tend to increase in continuity at early ages but remain relatively unstable until an individual reaches early- to middle-adulthood (Roberts & DelVecchio, 2000). However, before reviewing the research that specifically examines how personality features remain stable or change in the transition to adulthood, it is important to address how researchers test for temporal trait continuity.

Methods for Assessing Personality Stability

Overall, researchers examining temporal personality stability utilize three separate domains of analysis, group-level stability, individual-level (individual differences) stability, and ipsative (person-centered) stability (for reviews, see Andershed, 2010; Roberts et al., 2001; Robins, Fraley, Roberts, & Trzesniewski, 2001). Group-level stability, the most commonly used method in the literature, is assessed using two specific forms of analysis: rank-order stability and mean-level stability. Individual-level stability and ipsative stability (which gauge variations in continuity at the participant level) are less common among examinations of personality stability, but can also lead to differing conclusions as compared to analyses that solely address continuity at the group-level. Thus, it is necessary for research to investigate trait stability using multiple methods to achieve a comprehensive picture of how personality traits change or remain stable over time.

Rank-order stability refers to the extent to which the relative ordering of individuals on a given personality trait is maintained over time. More simply put, rank-order consistency simply gauges the test-retest or intra-class correlation between measurements at two time periods or more. While the correlation coefficients produced by analyses of rank-order consistency are excellent broad-based indicators of the continuity of dispositions over time, these correlations

tend to be poor in revealing the extent to which individuals grow and mature with time. “It is not uncommon to confuse moderate to high levels of test-retest consistency with the idea that personality does not change, but, in fact, differential continuity is often entirely unrelated to other indices of change” (Roberts, et al, 2001, p. 672).

There are two ways in which rank-order stability estimates can be assessed. The first is known as test-retest reliability, which “refers to the stability of [scores on] a measure or particular instrument from one measurement session to another” (Rosenthal & Rosnow, 2008, p. 90). Such stability estimates are computed by correlating the scores (using Pearson’s r) on a measure at one time point with scores obtained at a second time point. The Pearson product-moment stability coefficients produced by test-retest rank-order consistency analyses can usually be interpreted using the following standards: r ’s less than .30 are low, r ’s between .30 and .49 are moderate, and r ’s between .50 and above are high (Andershed, 2010; Cohen, 1988). The second measurement of rank-order stability can be determined using intra-class correlations, which are an index of intra-rater reliability; the “unconditional correlation between repeated measurements [or] the correlation between two arbitrary measurements made on the same subject” (Rousson, Gasser, & Seifert, 2002, p. 3444). Intra-class correlations also gauge stability across time, but do so at the item-level, to assess the absolute agreement of measurements while simultaneously accounting for systematic error due to poor reliability (Bruton, Conway, & Holgate, 2000; Rousson, et al., 2002). Intra-class correlations are also more accurate at gauging stability for three or more repeated assessments. The standards for intra-class correlation coefficients (ICCs) in these types of analyses tend to be more conservative than those for Pearson r correlations produced in measurements of test-retest reliability. As such, according to the standards used by Parkerson, Broadhead, and Tse (1993), an ICC of less than .40 is

“poor/low” between .40-.75 is “adequate/moderate”, and above .75 is “good/high”. Though both indices have their relative merits, statisticians suggest that no single reliability estimate provides a sufficient conclusion of stability and that these separate types of rank-order estimates should be used in tandem (see Bruton, et al., 2000; Rousson, et al., 2002).

Mean-level stability, as the name implies, is simply the average change in personality of a group over time. In other words, indices of mean-level stability allow one to tell whether on average a group is increasing, decreasing, or not changing in the levels of a personality trait from one time point to another. Simple, group-level analyses such as paired *t*-tests or repeated-measures ANOVAs can be used to examine whether or not these average changes over time (if present) represent a significant departure from previous group levels. Of course, significant, but non-meaningful changes in mean-levels over time can be observed at large enough sample sizes, so analysis of effect size indicators is also warranted in such analyses.

Individual-level (or individual difference) stability refers to the magnitude of increase or decrease exhibited by each individual participant from one time point to another, rather than broadly examining group-level variation. Importantly, tests of individual difference stability can highlight personality variation that may be missed by analyses at the group-level. Specifically, these types of analyses can reveal individual levels of change over time in cases where no average group-level is observed. Simple methods of assessing individual-level change in personality traits can be achieved through the calculation of difference scores or residual change scores, but these types of analyses can be significantly affected by reliability problems such as regression to the mean (Roberts, et al., 2001). To address this problem, more sophisticated analyses of individual-level change can be examined using the Reliable Change Index (RCI; Christiansen & Mendoza, 1986; see the analyses section below to show how this is calculated).

This type of analysis allows the researcher to standardize each individual level of change and examine the proportion of individuals who decrease, increase, or show no significant change in each trait examined over time. Any individuals with an RCI score above 1.96 or below -1.96 can be classified as having increased or decreased, respectively, in the trait being assessed.

Finally, ipsative stability analyses gauge “a change in the configuration of variables within an individual over time” (Roberts, et al., 2001, p. 673). Analyses testing person-centered change allow the research to focus on multiple dimensions of change over time in an individual, rather than examining individual trait changes separately. Typically these types of methods utilize a profile similarity analysis such as a Q-sort technique, logistic regression, or more recently through latent transition analyses using structural equation modeling (Collins & Horn, 1991). Significant differences in these types of analyses reveal considerable multidimensional change or transformation in an individual’s personality makeup. Most importantly, latent transition analyses in particular can help to identify if an individual changes in their group status from initial assessment to follow-up.

Observations of Stability from Normative Personality Research

In order to achieve a meaningful comparison for research examining the stability of psychopathic traits from adolescence to adulthood it is important first to determine how normative personality traits change during this transition. Such an analysis is also particularly relevant because, as previously mentioned, a true understanding of abnormal personality functioning requires an awareness of normative personality development and how they compare (Cicchetti, 2006; Steinberg, Dahl, Keating, Kupfer, Masten, et al., 2006). This line of reasoning is consistent with research indicating that psychopathy may be understood as an extreme version of a “normal” personality profile (Lynam & Derefinko, 2006; Lynam & Widiger, 2007). As the

majority of recent personality research focuses on the Five Factor (or Big Five) model, this analysis of normative personality change will focus specifically on studies that gauge the overall stability of these traits from adolescence to adulthood.

To begin with a basic investigation into the stability of personality traits, a meta-analysis conducted by Roberts and DelVecchio (2000) examined the rank order stability of Five Factor traits from childhood to old age. In their study, the researchers meta-analyzed 152 longitudinal studies to arrive at 3,217 test-retest (Pearson's r) correlation coefficients that examined the relative stability of personality traits from newborn life to old age. Because research has indicated that rank-order stability estimates decrease as the time interval between initial and follow-up assessments increase, the derived correlations across each age period were corrected for the time interval for each study used in the analysis. Overall, the results of their analysis revealed an upward linear trend in personality trait consistency at progressively later age groups. Specifically, test-retest correlation coefficients showed that trait consistency increased from .31 (moderate) in childhood to .54 (high) in early adulthood, and finally peaking at .74 (high) between the ages of 50 and 60. However, of utmost importance to the present study, rank-order stability showed a particular increase from moderate stability in adolescence (.43; ages 12-18), to high stability in the transition to adulthood (.54; ages 18-22), and even higher stability into early adulthood (.60; ages 22-29). This finding suggests a significant improvement in personality stability as an adolescent makes the transition into early adulthood. Nevertheless, these results still revealed relatively high levels of consistency across the life course, which offering modest support for the assessment of personality features prior to adulthood.

Moving to investigations of personality stability using mean-level change, Roberts and colleagues (2006) conducted a meta-analysis of 92 studies to determine the average change in

personality traits across the life course. The results of their analysis revealed two important findings of note. First, they found overall increases over time in elements of social dominance (a particular facet of extraversion) and emotional stability from adolescence to adulthood, which is consistent with research that indicates that these types of traits reflect normative increases in psychosocial maturity in the transition to adulthood (see Monahan, Steinberg, Cauffman, & Mulvey, 2009). Second, and most important to the present analysis, the most significant changes—particularly for social vitality, openness to experience, and conscientiousness—revealed increases in the levels of these traits in young adulthood as opposed to adolescence. These findings imply that some aspects of an individual’s personality show significant changes in the transition from adolescence to young adulthood, implying a potential for individual normative growth in personality over time.

Though the findings from these previous studies offer some general conclusions regarding change and stability in personality in the transition to adulthood, they miss an interpretation of how traits develop at the individual level. More relevant to the present study aims (outlined at the end of the study summary), other personality research that has examined personality stability and change in the transition to adulthood has been conducted using more comprehensive analyses (Roberts, et al., 2001; Robins, et al., 2001). These studies are especially important because they allow for a simultaneous assessment of general personality stability at the group-, individual-, and person-centered level. For instance, Robins and colleagues conducted a study of Big Five personality trait stability in college students ($n = 270$) who were originally assessed at university entrance (ages 18 or 19) and were reassessed in their levels of these traits four years later (at age 22 or 23). Their analyses included assessments of rank-order stability, mean-level stability, individual-level stability, and ipsative stability. Results of their analyses

relating to rank-order stability (using ICCs) revealed quite high levels of absolute agreement over time, ranging from .63 for neuroticism (adequate/moderate) to .92 (good/high) in terms of openness to experience. Comparing these findings to mean-level change, their results indicated overall stability in features of extraversion over time, but significant increases in agreeableness, conscientiousness, and openness from initial assessment to follow-up. Interestingly, examination of the mean-level change of neuroticism revealed a strong decrease in levels of this trait over time. Results from their individual difference change analyses (using the RCI) indicated that the vast majority of participants showed no significant individual-level change across all trait dimensions from initial entry to college to four years later. But consistent with the mean-level analysis, a significant proportion (23%) of participants showed an overall decrease in levels of neuroticism from initial assessment to follow-up, compared to other personality dimensions (proportion of decrease 2-8%). A higher proportion of participants also increased on levels of agreeableness (14%) and conscientiousness (13%) than the other dimensions (proportion of increase 4-9%). Finally, the results from their ipsative stability analysis (using a Q-sort technique) revealed moderate profile stability over time. In particular, most of the profile change across individuals in the sample reflected changes in mean levels and increasing variance of scores rather than significant changes in the orientation (relations between dimensions) of their profiles.

Interpretation of their findings indicates that different indices of personality features from late adolescence to early adulthood yield different conclusions regarding trait consistency. If one were to focus on the results relating to rank-order stability and ipsative stability, one would find considerable consistency over time. In fact, echoing the findings from Roberts and DelVecchio's (2000) meta-analysis of rank order stability above, rank order stability estimates across the

transition to adulthood (ages 18-22) showed moderate-to-high stability during this period. However, analysis of mean-level and individual-level change, showed significant departures from initial assessments at follow-up, particularly for neuroticism, agreeableness, and conscientiousness. Similar to the findings in Roberts and colleagues' (2006) meta-analysis of mean-level change, participants in this study showed significant decreases in neuroticism (Roberts and colleagues showed increases in emotional stability) and significant increases in conscientiousness and agreeableness (similar to social vitality) during the transition to adulthood.

Another study by Roberts and colleagues (2001) examined the rank-order, mean-level, individual-level, and ipsative change in personality features by following a population of older adolescents (age 18) into young adulthood (age 26) in the Dunedin birth cohort ($n = 921$). Specifically, their analyses focused on four domains of personality: constraint (harm avoidance and control), negative emotionality (stress reaction and aggression), agentic positive emotionality (achievement and social potency) and communal positive emotionality (well-being and social closeness). Results from the rank-order stability analyses (using Pearson's r) revealed moderate-to-high levels of rank order stability from age 18 to 26, with the highest levels of stability related to the dimension of constraint (.67; high) and the lowest attributed to communal positive emotionality (.49; moderate). However, when looking at the results relating to mean level change of personality traits over time, participants in the study showed significant increases in their levels of constraint ($\eta^2 = .02$) and agentic positive emotionality ($\eta^2 = .28$) and significant decreases in negative emotionality ($\eta^2 = .10$). These results and those of the individual-level change analyses yielded findings consistent with those found by Robins and colleagues (2001). Across of the personality dimensions, the vast majority of participants showed no significant individual change. Further, the personality features of negative emotionality (comparable to

neuroticism) revealed a disproportionate percentage of individuals with significant decreases from late adolescence to adulthood (20.7%) compared to the other domains (proportions ranging from 2.5% to 10.2%). A disproportionate number of participants also increased on agentic positive emotionality (similar to conscientiousness; 25.3%) than the other domains (proportions ranging from 7.1% to 10.4%). Finally, their results from ipsative stability analyses indicated that individuals who initially scored higher on constraint and social closeness showed higher levels of profile consistency over time. Interestingly, they also found that lower levels of negative emotionality at initial assessment also yielded higher levels of profile consistency. This suggests that increasing levels of negative emotionality (or neuroticism) would likely produce less consistent personality profiles from adolescence to adulthood.

Across all of the studies presented, there appears to be, at minimum, a moderate-to-high level of rank-order personality stability from adolescence to adulthood. However, considerable changes in personality occur when an adolescent makes the transition early adulthood, as evidenced by assessments of mean-level and individual-level stability. In particular, normative changes in psychosocial maturity (see Monahan, et al., 2009) conceptually appear to forecast significant increases in traits related to conscientiousness and agreeableness (Roberts, et al., 2001; 2006; Robins, et al., 2001). Additionally, traits related to neuroticism or negative emotionality either show significant decreases from adolescence to adulthood or higher levels of these traits produce lower levels of trait stability in the transition to adulthood. Taken together, while some degree of trait stability occurs from adolescence to adulthood, the research also suggests normative changes in particular personality dimensions also occur also accompany this developmental transition. This is important to keep in mind when evaluating research that specifically examines psychopathic trait stability.

Evidence is Mixed on Whether Psychopathy is Stable during the Transition from Adolescence to Adulthood.

Overall, indices of normative personality stability (based solely on rank-order estimates) from adolescence through the transition to adulthood imply moderate levels of consistency throughout this period. Thus, if one were to simply to extend these findings to infer the consistency of psychopathic traits from adolescence to adulthood, one would assume these traits to be stable. However, some research would suggest that this would be an erroneous assumption. In particular, Clark (2005) suggests that individuals with personality disorder pathology tend to show less stable personality across the life course than non-disordered individuals. For instance, she highlights research showing that in the period of developmental transition from adolescence to adulthood, stability coefficients of personality disorder features drop rather than increase as normal personality traits would (Grilo, Sanislow, Gunderson, Pagano, Yen, et al., 2004; Johnson, Cohen, Kasen, Skodol, Hamagami, et al., 2000). Such findings appear to coincide well with overall clinical assumptions regarding personality disorder. Specifically, the DSM forbids diagnosing personality disorder prior to adulthood, except in rare cases, suggesting that “diagnosing” psychopathy amongst adolescents may be, in most cases, contraindicated.

Evidence from normative personality research also highlights some cause for caution about the possible stability of psychopathic traits from adolescence to adulthood. In particular, research examining mean-level and individual-level change suggests that the trait dimensions of agreeableness and conscientiousness show marked increases over the transition from adolescence to adulthood (Roberts, et al., 2001; 2006; Robins, et al., 2001). This growth in agreeableness and conscientiousness in the transition to adulthood is important, as research has indicated a strong negative association between these personality dimensions and features of psychopathy (Hart & Hare, 1994; Lynam, Caspi, Moffitt, Raine, Loeber, et al., 2005; Miller, Lynam, Widiger, &

Leukefeld, 2001). In fact, the five-factor model of psychopathy, originally proposed by Widiger and Lynam (1998), focuses most prominently on low levels of agreeableness and conscientiousness within the personality profile of the “psychopath”. Following this logic, it would appear that the normative increases in conscientiousness and agreeableness would also result in normative decreases in levels of psychopathic traits over time. However, before one can make a definitive judgment about the overall stability of psychopathic traits, it is necessary to review the research that has attempted to directly test the permanence of these traits over time.

Research on Stability of Psychopathy in General

Research that examines the degree of stability in psychopathy within discrete developmental periods yield results that tend to follow the same pattern as those observed in normative personality research. Indeed, research examining the rank-order stability of psychopathic traits using the APSD and YPI across adolescence (Barry, Barry, Deming, and Lochman, 2008; Muñoz & Frick, 2007; Muñoz, Kerr, & Bésic, 2008) and the PCL-R in adulthood (Rutherford, Cacciola, Alterman, McKay & Cook, 1999) have observed moderate-to-high levels of trait consistency during these discrete periods. As an example, Muñoz and colleagues (2008) followed a community sample ($n = 667$) of youth ages 12-15 over four years using the YPI as the measurement of psychopathy (ending at ages 16 to 19). Rank-order stability estimates for YPI total scores across the entire follow-up period showed high levels of consistency over time (Pearson’s r coefficients ranging from .52-.67; all high). As for adult psychopathic trait stability, Rutherford and colleagues (1999) examined the two-year rank-order stability and mean-level absolute agreement of psychopathic features in a sample of male and female (ages 18-55; $M = 41.0$, $SD = 5.0$) methadone patients ($n = 225$). For male participants, rank-order correlation estimates (ICCs) for PCL-R total scores were high (.60), but the stability

of Factor 2 (.50; behavioral-lifestyle) was stronger than that for Factor 1 (.43; interpersonal-affective). Further, mean-level stability analyses revealed that total PCL-R scores and Factor 2 scores increased over the two-year follow-up.

Unfortunately, like the aforementioned research, studies of psychopathic trait stability in the transition from adolescence to adulthood tend to only use group-level indices of stability (e.g. rank-order and mean-level) as the central criterion for interpreting the consistency of these traits over time. At this point, no research that has examined the temporal stability of psychopathic traits has used ipsative methods to assess multidimensional continuity (Andershed, 2010). But the evidence that is available examining the continuity of psychopathic traits from adolescence to adulthood has shown modest to moderate stability. For instance, a study by Loney, Taylor, Butler, and Iacono (2007) examined the 6-year stability of adolescent psychopathic features in community males ($n = 475$) enrolled in the Minnesota Twin and Family Study. At the study onset, participants ranged in age from 16 to 18 ($M = 17.5$, $SD = 0.4$). Psychopathic traits were gauged using the Minnesota Temperament Inventory (MTI). The MTI includes 16 items that tap the core features of Cleckley's (1941) original conceptualization of psychopathy. Factor analysis of the items in the measure yielded two supraordinate subscales—emotional detachment and antisocial lifestyle—the stability of which was analyzed separately using rank-order and mean-level stability methods. Results from rank-order absolute agreement analyses (using ICCs) indicated that both factors yielded similarly adequate levels of stability from adolescence to adulthood (.40 for detachment and .41 for antisocial lifestyle). Further, as might be expected from a community-based sample, mean-level stability analysis (using paired-sample t -tests) showed significant decreases in both 'psychopathy' dimensions from initial assessment to follow-up.

Another pair of studies conducted by Lynam and colleagues (2007; 2008) examined the temporal stability of psychopathic features on the CPS (in adolescence; parent ratings) and the PCL:SV (in adulthood; interview ratings) from participants in the Pittsburgh Youth Study from starting at age 13 and again at age 24. Analyses of psychopathic trait stability included rank-order and moderation analyses of the impact of demographic variables on rank-order stability. Results from the rank-order stability analyses (using Pearson's r) indicated moderate stability in total scores over time (.31) and low-to-moderate stability for the facets of Factor 2 (.28 [low] for impulsivity; .33 [moderate] for antisocial behavior), but poor rank-order stability for both facets of Factor 1 (.19 for interpersonal; .15 for affective). However, these seemingly small levels of agreement were likely due to the fact that the psychopathy assessments were conducted by different raters (parents in adolescence; interviewers in adulthood) and may also have been a function of the length of interval between assessment periods (11 years). Analysis of the potential moderating effect of background characteristics, the researchers also observed that high initial levels of physical punishment and peer delinquency and low levels of family SES increased the stability of psychopathic traits from adolescence to adulthood (Lynam, Loeber, & Stouthamer-Loeber, 2008). Though the results from this study suggest relatively mild trait stability across the transition to adulthood, the study is important by highlighting the potential for demographic characteristics (particularly peer delinquency, which will be covered in more detail in Study 3) to serve as risk factors for continued psychopathic features in young adulthood.

This research also provided some evidence that the diagnostic stability (whether the “psychopath” classification remains over time) of psychopathy in general is less optimistic than analyses of stability at the trait level. Specifically, Lynam and colleagues (2007) also examined how well the diagnostic status of psychopathy in adolescence predicted later adult classification

as a “psychopath”. In this examination, the authors conducted analyses of the sensitivity, specificity, positive predictive power, and negative predictive power of several different cut-points on the CPS (ranging from the top 30% to the top 5% of scorers). The results indicated that across all cut-points the specificity (probability of no age 13 diagnosis given no diagnosis at age 24) and negative predictive power (NPP; probability of no age 24 diagnosis given no diagnosis at age 13) were high (specificity ranging from .73-.96; NPP ranging from .93-.96), suggesting that low levels of psychopathic traits in adolescence are predictive of low psychopathy in adulthood. However, the results relating to sensitivity (probability of psychopathy diagnosis at age 13 given diagnosis at age 24) yielded poorer confidence (ranging from .14-.63), with sensitivity decreasing linearly at more stringent cut-points. The positive predictive power (probability of psychopathy diagnosis at age 24 given diagnosis at age 13) was also particularly poor (ranging from .15-.29). These final two results suggest that high levels of psychopathic traits in young adolescence may be actually quite poor at predicting high levels of psychopathy in adulthood.

Only two studies at present have examined individual-level indices of psychopathic trait stability in addition to group-level consistency. These studies are particularly important to the present study aims, not only because of their comprehensiveness, but also for their direct relevance to the age group in this proposed study. First, Blonigen and colleagues (2006) sought to assess the rank-order, mean-level, and individual-level stability of psychopathic traits from adolescence (starting at age 17) to adulthood (ending at age 24) in a sample of 626 male and female twin pairs using the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996). Analyses of stability were assessed separately for the two overarching dimensions of the measure: fearless dominance (interpersonal-affective) and impulsive antisociality (social

deviance). Results from the rank-order stability analyses indicated that both psychopathy dimensions showed high levels of trait agreement (using Pearson's r) from adolescence to adulthood (.75 for fearless dominance and .61 for impulsive antisociality). However, results from the mean-level stability analyses revealed that whereas fearless dominance increased slightly, but significantly by follow-up ($\eta^2 = .02$). Additionally, levels of impulsive antisociality showed a considerably large (and likely normative) decrease over the transition ($\eta^2 = .45$). Consistent with these findings, examination of the individual-level stability (using the RCI) of fearless dominance showed that the vast majority (87.5% of participants) had no appreciable change in their scores by follow-up. In comparison, nearly as many participants decreased in their individual-levels of impulsive antisociality (42.2%) as those who remained consistent over time (55.8%).

The other comprehensive analysis of psychopathic trait stability in the transition from adolescence (starting at age 16) to late adolescence/early adulthood (ending at age 19) was conducted amongst a sample of 1,480 twin pairs using the YPI (Forsman, Lichtenstein, Andershed, & Larsson, 2008). This study is also particularly important because of their use of the YPI as a measure of psychopathy, which allows for a direct comparison to the eventual results in this proposed dissertation. In this study, the researchers gauged psychopathic trait stability using indices of rank-order, mean-level and individual-level change. Results from the rank-order stability analyses (using Pearson's r) revealed that each of the three dimensions of the YPI form of psychopathic traits in males—grandiose/manipulative (.51; high), callous-unemotional (.43; moderate), and impulsive/irresponsible (.61; high)—and the total psychopathy latent construct (.60; high) reflected moderate-to-high levels of agreement. As for mean-level stability, analyses indicated that male youth showed small but significant increases in each of the

3 trait dimensions (η^2 ranging from .02 to .21) by young adulthood. Finally, the results from the individual-level analyses (using the RCI) indicated that the vast majority of participants showed no appreciable change in any of the psychopathy dimensions from initial levels to follow-up. However, a disproportionately large group of male youth showed increases by follow-up in the impulsive/irresponsible dimension (20.7%) when compared to the other dimensions (7.2-8.4%). The results of the present study support the idea that, barring slight variations (particularly individual-level decreases in impulsive/irresponsible features), psychopathic traits can show moderate (and in some cases, high) levels of stability in the transition from adolescence to adulthood.

Taken together, the results of these studies show some mirrors to the research on normative personality, suggesting that psychopathic characteristics can show some level of stability from adolescence to adulthood. However, these studies also indicate that for some youth there is a parallel possibility of change in psychopathic symptoms over time, suggesting that research needs to identify the important risk factors for and protective factors against the continued presentation of psychopathy in adulthood (see Salekin et al., 2008). As the remainder of the present study will seek to establish, the potential presence of subtypes of psychopathy may serve to reduce the stability (particularly from the inclusion of secondary psychopathy) of psychopathic traits when examined as an aggregate. The potential for heterogeneity to reduce confidence in stability (by lowering stability estimates) suggests a need to identify these subgroups in this research to determine if they indeed differ in the relative stability of these psychopathic traits.

When Psychopathy is Disaggregated into Primary and Secondary Variants, we May Find that the Secondary Variant is Less Stable Over Time

Research has indicated that heterogeneity in the construct of psychopathy exists and that primary and secondary variants of psychopathy can be identified both in adult and adolescent populations (e.g. Kimonis, et al., 2010; Newman & Schmitt, 1998; Skeem et al., 2007; Tatar et al., 2012; Vaughn, Edens, Howard, & Smith, 2009). Though several theoretical perspectives exist that aim to delineate psychopathy subtypes (such as Lykken, 1995; McCord & McCord, 1964; Mealey, 1995; Porter, 1996), the most widely held and researched theoretical perspective is that of Karpman (1948; 1955), which suggests that variants can best be discriminated by the presence or absence of anxiety (see Skeem, et al., 2003 for a review). According to Karpman (1948; 1955), individuals presenting with primary psychopathy are absent conscience and lack deep human emotions (e.g., guilt) or interpersonal attachments. On the other hand, the psychopathic symptomatology associated with secondary psychopathy is basically a reflection of neurosis, where hostility and heightened emotional reactivity disturb the functioning of an otherwise intact conscience. For Karpman, one might frame neurosis or anxiety as the key marker for secondary psychopathy. There is some support for this notion, as anxiety has proven important for disaggregating those with high scores on measures of psychopathy (Kosson & Newman, 1995; Skeem, Johansson, Andershed, Kerr, & Eno Loudon, 2007).

This connection between neuroticism and secondary psychopathy may play an important role in affecting the stability of their psychopathic traits over time. As previously mentioned, compared to the other personality dimensions of the Big Five and Five Factor models, features of neuroticism (and negative emotionality, which represents an overlapping construct) appear to have the lowest levels of stability in the transition from adolescence to adulthood (Roberts, et al., 2001; Robins, et al., 2001). The findings from both of these studies indicated that levels of

neuroticism and negative emotionality at the group-level showed strong decreases from initial assessments in late adolescence to follow-up in early adulthood. These decreases were also observed at the individual level, as a disproportionate percentage of individuals in each study had statistically significant decrements in these traits in the transition to adulthood. Finally, as observed in Roberts, et al. (2001), analyses relating to ipsative trait stability indicated that higher levels of negative emotionality at initial assessment were related to lower levels of trait profile consistency over time. Since individuals with secondary psychopathy are proposed to experience high levels of neuroticism—and can be discriminated from primary psychopaths based on their levels of this trait dimension—it is likely that these individuals would show less psychopathic trait continuity in the transition to adulthood.

There also appears to be some theoretical grounding for divergences between subtypes in the stability of these features as a function of relative susceptibility to the environment. Specifically, the prevailing opinion is that secondary psychopathy may be less stable due to enhanced sensitivity to environmental influence. For instance, psychopathy subtypes are hypothesized differ in the etiology of their disposition, which serves to delineate the constitutional differences. Primary psychopathy is believed to be due to a genetic predisposition, whereas secondary psychopathy is thought to derive from environmental insult, particularly a history of childhood trauma, such as parental rejection and abuse (Karpman, 1948; Porter, 1996). Another theory proposed by Mealey (1995) also paints secondary psychopathy (or sociopathy in her work) as an emotionally conditioned reaction to adverse environmental circumstances, particularly familial and neighborhood-based risk factors that limit the opportunity for these individuals to think and act in prosocial ways. In other words, as secondary psychopathy is proposed to derive its origins from environmental influence, it stands to reason that the

environment would also play a role either in exacerbating or reducing the expression of secondary psychopathic traits, affecting their stability over time.

Though studies have yet to determine if traumatic experiences relate to the stability of psychopathic traits, research highlighting the positive association between abuse/trauma and secondary psychopathy has been supported in research with adolescents (Tatar et al., 2012; Vaughn, et al., 2009). For instance, a study by Tatar and colleagues (2012) sought to connect traumatic experiences and symptoms of post-traumatic stress disorder to incarcerated youth with secondary psychopathy in the sample of incarcerated adolescents targeted by the present study. Though the experience of trauma was based on retrospective reports, the results (using negative binomial regression analyses to adjust for overdispersion) indicated that youth with secondary psychopathy reported a wider variety of traumatic experiences in their lives than youth with primary psychopathy ($IRR = 1.27$). The researchers also found that secondary youth manifested more symptoms of post-traumatic stress disorder than primary youth ($IRR = 1.28$), suggesting that some of the anxiety and neuroticism attributed to the secondary variant are connected with these traumatic histories. In addition, several studies link reports of childhood abuse and neglect to higher scores on measures of psychopathy in general (Campbell, Porter, & Santor, 2004; Forth & Burke, 1998; Krischer, & Sevecke, 2008; Lang, af Klinteberg, & Alm, 2002; Marshall & Cooke, 1995; Weiler & Widom, 1996); with stronger associations noted for general antisocial deviance rather than emotional detachment per se (Poythress, Skeem, & Lilienfeld, 2006, Krischer, & Sevecke, 2008; O'Neill, Lidz, & Heilbrun, 2003). As features of one's environment, specifically abuse and trauma, have been shown to relate more strongly to secondary psychopathy and are associated with higher levels of psychopathic traits, it is likely that the environment may also play a role in determining the stability of these traits over time.

Further, these theoretical perspectives suggest that the psychopathic features presented by the secondary subtype are the result of underlying psychopathology (namely anxiety [Karpman] and dissociation [Porter]) which theoretically renders these individuals more amenable to treatment efforts than their primary counterparts (also see Blackburn, 1987; Mealey, 1995). This is not to say that individuals with the more traditional form of ‘primary’ psychopathy do not respond positively to intervention; research suggests that adolescent offenders high in psychopathy (in general) show similar reductions in recidivism risk following treatment than those low in such traits (see Caldwell, Skeem, Salekin, & Van Rybroek, 2006). And to date, no systematic examinations of the differences between primary and secondary subtypes in their responsivity to treatment have been conducted. Nevertheless, these theoretical distinctions further underscore the claim that individuals with secondary psychopathy are more responsive to environmental influence. The idea is that disaggregating youth into primary and secondary variants may reveal individuals with more and less stable psychopathic traits and related antisocial behaviors, and most likely across developmental stages.

This issue of differential stability across psychopathy subtypes is particularly troubling considering the possibility that certain psychopathy measures for adolescents may be identifying a disproportionate number of youth as “psychopathic” that might be more precisely expressing secondary psychopathy. Individuals with secondary psychopathy are purported to be more prone to aggression and criminal behavior (see Fowles & Dindo, 2009; Karpman, 1948; Kimonis, et al., 2010), due to their marked impairments in impulsivity and emotional reactivity. As a result, including behavioral components in measures of adolescent psychopathy may, as a product, capture more youth with secondary psychopathy. This suggests that assessments of psychopathy within the legal context should consider using adolescent psychopathy measures that omit

antisociality from their criteria, such as the Youth Psychopathic Traits Inventory (YPI; Andershed et al., 2002). Further, considering that youth with secondary psychopathy may be more sensitive to environmental influence, they also may also be more sensitive the iatrogenic effects of incarceration. As psychopathy measures are often used in the legal context to justify incarceration and punishment (see Seagrave & Grisso, 2002), there may be unintended consequences—particularly for youth with secondary psychopathy—for the use of adolescent psychopathy measures to make legal decisions.

Research on Temporal Stability for Psychopathy Subtypes

Unfortunately, little extant research has examined the temporal stability of psychopathic traits separately for psychopathy subtypes. In fact, there is only one study that has empirically tested this issue longitudinally (Kimonis, et al., 2010). In this study, the researchers identified psychopathy subtypes in a sample ($n = 116$) of incarcerated juvenile offenders (ages 14-17; $M = 15.8$, $SD = 0.9$) using the Psychopathy Checklist: Youth Version (PCL:YV; Forth et al., 2003) and a measure of anxiety (consistent with Karpman, 1948; 1955). The offenders were assessed while incarcerated at a juvenile facility and then completed yearly follow-ups for the next two years. To begin, the researchers were interested in examining subtype differences in offending behavior and psychiatric symptomatology throughout the course of the study. As one might expect, most of their findings were consistent with theoretical distinctions (e.g. youth with secondary psychopathy showed more hostility [$\eta^2 = .13$], more varied histories of abuse [$\eta^2 = .06$], and more psychiatric problems related to depression [$\eta^2 = .20$] and global distress [$\eta^2 = .26$] than youth with primary psychopathy). In addition, the authors found that secondary youth engaged in significantly more institutional violence [$\phi = .26$] and more incidents of reactive

aggression [$\phi = .27$] than primary youth (the specific results of which will be addressed in more detail in Study 2 below).

However, more pertinent to the present study, the researchers were also interested in examining the stability of the youths' psychopathic traits and institutional violence over the two-year follow-up. To address this aim, the researchers utilized multi-group growth curve modeling through structural equation modeling. Growth curve models can be considered a more sophisticated analysis of mean-level continuity that allows one to graphically model the average change in personality traits of particular groups of individuals over time. Further, such analyses allow for the researcher to control for a greater portion of the variance that is lost due to measurement error. Contrary to what might be expected, the researchers found that both psychopathy variants showed strikingly similar trajectories of change in their psychopathic traits ($\Delta\chi^2[1] = .39, p > .10$) and yielded no significant differences in the overall levels ($\Delta\chi^2[1] = .66, p > .10$) of their traits over time. For both psychopathy variants, their levels of psychopathic traits showed a significant decline across the two-year follow-up. However, differences in the stability of the youth's engagement in institutional violence were observed between the variants. Interestingly, "secondary variants followed a significantly different trajectory of violent offending than other groups ($\Delta\chi^2(3) = 9.95, p < .05$), characterized by significantly faster linear growth ($\Delta\chi^2(2) = 9.47, p < .01$), and greater quadratic decline over time ($\Delta\chi^2(2) = 9.37, p < .01$)." (p. 7). In other words, while secondary youth evinced higher levels of violence in the institution, this behavior was much more unstable than primary or comparison youth.

These findings could be taken as evidence that adolescent psychopathy subtypes may show little variation in trait stability and that secondary psychopaths may actually show less stability of violent antisocial behavior over time. However, there are two notable concerns that

require empirical examination before this conclusion can be justified. First, the study only involved a two-year follow-up (that yields too short of a follow-up period), which means that a substantial portion of the sample had not yet reached adulthood by the end of the study. This is important as the transition to adulthood may represent the critical point at which psychopathy variants begin to reveal divergences in the stability of their traits (see Toth & Cicchetti, 1999). Second, the preceding study only examined psychopathic trait and behavior stability using group-centered mean-level analyses of change. As previously mentioned, different methods of assessing personality trait stability may yield varying conclusions, so it is necessary for research to investigate trait stability using multiple methods to achieve a comprehensive picture of how personality traits change or remain stable over time. It is certainly possible that indices of individual-level or ipsative change may reveal divergences in stability across subtypes that may be missed by broad, group-based methods. As such, it is as yet unclear and is the task of future research to determine if psychopathy variants differ in the stability of their psychopathic traits as they transition into adulthood.

The Present Study Addresses Psychopathy Subtype Differences in Psychopathic Trait Stability

In my first study, I examine the relative stability of psychopathic traits (using a consistent measure of adolescent psychopathy; in this case, the YPI) across psychopathy variants from adolescence (starting at ages 14-17) into the transition to adulthood (ending at ages 21-26). The basic goal is to obtain empirical support for the contention that psychopathic traits as a whole will be relatively unstable from adolescence to adulthood. More importantly, the present study also seeks to determine that the secondary variant of psychopathy will show less stability over the transition to adulthood in psychopathic personality features than the primary variant. Given that arguments against the “downward extension” of psychopathic traits from adulthood to

adolescence rest on concerns regarding the temporal stability of these features over time (see Hart et al., 2002; Seagrave & Grisso, 2002; Skeem & Cauffman, 2003), evidence delineating multiple subtypes of psychopathy suggests that more research is needed to fully address the issue of stability. For the field of psychopathy to advance understanding of the construct, it is important for research to identify how psychopathic traits in general, and psychopathy subtypes specifically, evince change (either similarly or divergently) as a product of developmental growth and transition.

Thus, the primary aim of this study is to compare the stability of YPI scores over an average seven-year period for youth with primary and secondary psychopathy. To put these stability estimates into context, I will also address the stability of psychopathic traits across the entire sample and will compare trait stability youth who score above and below the “diagnostic” cut-off on the YPI (see Cauffman, Kimonis, Dmitrieva, & Monahan, 2009). To accomplish this task, I will enlist a comprehensive set of personality stability indices that reflect both group-based (rank-order and mean-level) and individual-based (individual-level and ipsative) interpretations of stability over time. These stability estimates will be applied to YPI scores originally assessed as adolescents were incarcerated at a juvenile facility in Southern California and YPI scores that were reassessed at the follow-up interview (on average, seven years after initial assessment). Another important question is to determine whether or not adolescent YPI scores bear any level of diagnostic stability for adult psychopathy. In other words, the intention was to determine if YPI scores perform better at identifying individuals who will be high in psychopathic traits in adulthood, or better at identifying those who would not become/remain “psychopathic” as adults (using sensitivity and specificity indices). Finally, given concerns raised by Clark (2009) that personality disorder stability estimates vary depending on whether

personality disorder and related correlates are measured dimensionally (e.g. continuous variables) or categorically (e.g. group categorization), features related to secondary psychopathy (e.g. anxiety and trauma/abuse) were also used to predict change over time in psychopathy scores. The specific analyses that were conducted are addressed in the methods section below.

Methods

Sample

The original sample for the present study was comprised of 355 adolescent male offenders between the ages of 14 and 17 ($M = 16.42$, $SD = .80$), incarcerated at a secure juvenile facility in southern California. The ethnic representation of the sample was consistent with incarcerated youth in similar juvenile justice facilities in California (California Department of Justice, 2002): 53% Hispanic, 29% African American, 6.2% Caucasian, and 11.8% of primarily biracial origin. Seventy percent of the sample was adjudicated on a violent committing offense, 12% with a property offense, 7% with a public order offense, 3.5% each with a weapon or drug charge, and 5% with an unclassified crime.

The same sample of participants was re-recruited for the follow-up study, either while the participants were incarcerated in adult prison facilities ($n = 84$) or resided in the community ($n = 10$) at assessment time. Thus, the follow-up sample included a total of ninety-four participants who completed both the original and follow-up interviews. Participants were reassessed between 6 and 8 years ($M = 7.14$, $SD = 0.67$) after the original institutional interviews. As such, participants ranged in age from 21 to 26 ($M = 24.21$, $SD = 1.01$) at the follow-up assessment. The ethnic representation of the follow-up sample generally mirrored that of the original study sample 46.8% Hispanic, 36.2% African American, 7.4% Caucasian, and 9.6% biracial/other. In fact, preliminary analyses indicated that the ethnic representation of the follow-up sample did not

significantly differ from that of the original study sample ($\chi^2[3] = 2.374, p > .10$) or from those who did not complete the follow-up interview ($\chi^2[3] = 4.052, p > .10$). Unfortunately, since a follow-up interview date could not be obtained for youth who were not re-recruited in the study at the time this dissertation was prepared, an age comparison could not be computed between those who did and did not participate.

Procedures

In the original assessment schedule, youth who were newly admitted to the facility over the course of the original data collection period (between the spring of 2005 and the spring of 2007) were eligible to enroll in the study. Ninety-seven percent of the parents contacted gave their consent for their child's participation in the study and all youth completed an assent form. To guarantee privacy of responses, a Confidentiality Certificate was obtained from the Department of Health and Human Services. After the consent/assent process, participants were administered a baseline interview within 48 hours of arrival at the facility. In the following two months, participants completed five more interviews: one week, two weeks, three weeks, one month, and two months after the baseline interview. The interviews took between one and two hours to complete, were conducted individually, and consisted of a series of behavioral, attitudinal, and environmental measures. The interviewers read each question aloud to the participant, offered any clarification that was necessary, and recorded his response. Institutional records were also gathered from the California Youth Authority to serve as collateral reports for each participant.

Participants were reassessed roughly seven years (from January 2013 to the present) following completion of the original study interviews. At the end of the original interview schedule, participants were informed in the original consent process that they would be contacted

again in the future for further assessments. Participants provided their expected contact information upon release and this data was used as a starting point to contact them for the follow-up data interview. The principal investigator or a trained research assistant began by calling the contact number provided at the end of the original assessment period. If the provided number was current, an attempt was made to consent the participant. If the number was incorrect or has changed, the investigator or research assistant asked the responder if they have an updated number for the original participant. If the call received no response or if the number has been disconnected, the researchers conducted an internet search using the address provided at the end of the study to identify an updated number for the participant and will consent if contacted. The researchers also attempted to directly contact the participant's parent or legal guardian to obtain updated contact information, if none of these strategies were successful. In addition, incarcerated participants were identified using the California Department of Corrections and Rehabilitation (CDCR) inmate locator search engine (found at <http://inmatelocator.cdcr.ca.gov/>).

Once contact was made, the participants were consented for participation in the study over the phone—or in person, in the case of incarcerated participants—and an appointment date and location would be set for the interview. Most, if not all of the interviews were conducted in-person, by the proposing author or a trained undergraduate research assistant, at a location convenient for the participant (community sample) or at the CDCR facility housing the inmate participant. However, phone interviews were conducted if the participant resided in a location that was prohibitively distant from the University of California, Irvine (e.g. if the participant was more than 100 miles away). Participants were also allowed to complete the interview on a Qualtrics internet survey portal if they decided not to complete the interview in person or over

the phone. To guarantee privacy of responses, a Confidentiality Certificate was again obtained from the Department of Health and Human Services. For the in-person and phone interviews, the interviewer read each question aloud to the participant, offered any clarification that was necessary, and recorded his response. For those who completed the internet survey, a number was provided on the survey page so that the participants could call with any clarification questions. Interviews (or survey completion online) took roughly one to one-and-a-half hours to complete. Participants who completed the follow-up interview while in the community were compensated with a \$20 personal check or gift card to their choice of Walmart, Target, or Best Buy. Those who completed the interview within adult institutions were not compensated for their time as per CDCR research policies.

Adult institutional records were also sought from CDCR and adult arrest records following release for each participant were requested from the Federal Bureau of Investigation (FBI). Unfortunately, though approval was granted from CDCR for access to adult institution records, this information had not been provided prior to the composition of this dissertation manuscript. FBI records are still being reviewed by the organization's institutional review board. As such, adult official records were unavailable at this time.

Attrition/Selection Bias Concerns

One potential concern pertaining to the follow-up study addresses the overrepresentation of prison-based participants and the considerable attrition rate between the original study and the adult assessment. Specifically, it may have been the case that systematic differences between prison vs. community samples and recruited vs. non-recruited participants may predict non-participation and the generalizability of study findings. To illustrate the recruitment process, a graphical representation of the sample recruitment numbers is provided in Figure 1. To address

these concerns, a series of group comparisons using independent-samples *t*-tests on the demographic and key variables of interest were conducted between the “prison” ($N = 169$) and “community” ($N = 186$) samples, youth who were recruited for the study ($N = 94$) and those who were not ($N = 261$), and individuals who agreed ($N = 94$) or refused to participate ($N = 26$) in the study.

The findings comparing youth in the prison and community samples serve to alleviate concerns regarding selection bias. Specifically, the analyses revealed no significant group differences in baseline age ($t[353] = -0.572, p > .10$), race/ethnicity ($\chi^2[3] = 3.336, p > .10$), psychopathic traits ($t[353] = 0.204, p > .10$), anxiety ($t[353] = 0.944, p > .10$) or victimization history ($t[353] = 1.366, p > .10$). A similar pattern was observed comparing those who completed the study and those who did not. Specifically, no group differences were observed in age ($t[353] = 0.046, p > .10$), ethnicity ($\chi^2[3] = 5.226, p > .10$), psychopathy ($t[353] = 0.585, p > .10$), anxiety ($t[353] = -0.033, p > .10$), or victimization ($t[353] = 0.197, p > .10$). Finally, no differences were observed between youth who agreed to participate or who refused when approached for participation on any of the background variables of interest (all $ps > .10$).

Measures

Demographic information. Participants self-reported their age, race/ethnicity, and whether they had any prior incarcerations at the DJJ (in adolescence) or any CDCR facilities (in adulthood).

Psychopathy. The Youth Psychopathic Traits Inventory (YPI; Andershed et al., 2002) is a 50-item self-report measure of psychopathic traits that was administered at the week 3 assessment of the original interview and also at the follow-up interview. The items of the YPI were written to assess target traits in a relatively comprehensive (5 items per trait) and indirect,

nontransparent manner (e.g., “I usually feel calm when other people are scared”). The YPI consists of 10 scales: dishonest charm, grandiosity, lying, manipulation, remorselessness, callousness, unemotionality, impulsiveness, irresponsibility, and thrill seeking, that map onto three factors: Interpersonal (i.e., interpersonal traits, dishonest charm, grandiosity, lying, and manipulation), Affective (i.e., remorselessness, callousness, and unemotionality), and Lifestyle Impulsivity (i.e. impulsiveness, irresponsibility, thrill seeking; Andershed, et al., 2002; Poythress, Dembo, Wareham, & Greenbaum, 2006). The YPI correlates significantly with the PCL:YV (Cauffman et al., 2009), with low to moderate correlations with a variety of self-report conduct problem indices, supporting its convergent validity (Cauffman, et al., 2009).

In the original study sample, the YPI total and factor scores demonstrated adequate internal consistency (total score $\alpha = .90$; factor scores ranging from .71 [Affective] to .89 [Interpersonal]). For the 10 five-item scales, alphas were generally satisfactory (α range = .61 to .85) except for Callousness ($\alpha = .49$). As for the follow-up interviews, the YPI total and factor scores were also adequately internally consistent (total score $\alpha = .90$; factor scores ranging from .71 [Affective] to .88 [Interpersonal]). The 10 five-item subscales also yielded satisfactory alpha levels (α range = .59 to .80), except for Callousness, yet again ($\alpha = .21$).

One issue of concern for the present study is the appropriateness of using the Youth Psychopathic Traits Inventory as a measure of psychopathy, both in the initial interview schedule while the youth were incarcerated and again at follow-up. The central question was whether the YPI would be valid for the group during early adulthood, especially since the YPI was originally developed and normed for use in measuring psychopathic traits among adolescents (ages 12 to 17; Andershed, et al., 2002). In fact, there is some precedence for this practice. For instance, a study conducted by Forsman and Colleagues (2008)—using similar age groups to the proposed

study—conducted a longitudinal investigation of the stability psychopathic traits amongst male and female twin pairs, beginning at ages 16-17 and finishing up at ages 19-20. In addition to the key findings attesting to the considerable rank-order and mean level stability of the measure, the researchers observed little to suggest that the YPI did not work similarly across both age groups. Further, other research has also used the YPI to examine psychopathic traits using samples that include participants over the age of 18 (see Andershed, Hodgins, & Tengstrom, 2007; van Baardewijk, Andershed, Stegge, Nilsson, Scholte, et al., 2010), suggesting that it was reasonably valid to use the YPI amongst individuals in early adulthood.

Despite this fact, there also remains a practical concern regarding the use of an adolescent measure of psychopathy when other measures of the construct have been designed for specific use with adults, such as the PCL-R (Hare, 2003) and the PPI-R (Lilienfeld & Widows, 2005). Part of the problem with the use of the PCL-R is that it gauges psychopathic traits using an interview format, rather than by self-report, which would likely introduce a confound of measurement bias if it were to be used as the assessment of psychopathy at follow-up. The PPI-R would be a better choice in this regard, as both measures are administered through self-report. However, these and other adult measures of psychopathy have a different conceptualization of the construct and a different factor structure of the items in the measure than that of the YPI. For instance, the PCL-R includes items gauging criminal behavior and the PPI-R includes features of boldness/meanness, neither of which are included in the construct of psychopathy captured by the YPI. Using these measures would have introduced a confound based on construct bias that may have also affected the results. As such, it was necessary to use a measure that captures the most similar conceptualization of psychopathy (using the same measurement format) to that of

the YPI. Since there were no comparable measures designed specifically for adults, the YPI was used for both the adolescent and young adult assessments of psychopathy.

Adolescent Anxiety. Symptoms of trait anxiety were assessed using the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1979). The RCMAS is a 37-item scale designed to tap into the nature and level of anxiety in children. Each statement is given either a "Yes" (this applies to me) or "No" (does not apply) response. A total anxiety score is computed based on 28 items ($\alpha = .81$), which are divided into three subscales: Physiological Anxiety, Worry/Oversensitivity, and Social Concerns/Concentration. The Physiological Anxiety subscale is composed of 11 items ($\alpha = .64$), measuring somatic complaints, such as sleep difficulties and nausea (e.g. "*It is hard for me to get to sleep at night*"). Eleven items make up the Worry/Oversensitivity scale ($\alpha = .76$), which covers obsessive concerns (e.g. "*I worry about what is going to happen*"). Finally, the Social Concerns/Concentration scale ($\alpha = .68$) taps into social fears and distracting thoughts (e.g. "*I feel that others do not like the way I do things*"). The RCMAS has been shown to provide considerable convergent validity when compared to other anxiety trait scales (Lee, Piersel, Friedlander, & Collamer, 1988; Reynolds, 1982) and has also been shown to discriminate between boys with anxiety disorders and those without psychiatric illness (Perrin & Last, 1992). All of these scales are comprised of affirmative responses, so higher scores mean higher levels of anxiety (Reynolds & Richmond, 1979). The RCMAS was administered at week 3 of the original interview schedule.

Adult Anxiety. Symptoms of trait anxiety for the follow-up interview were assessed using the Adult Manifest Anxiety Scale-Adult Version (AMAS-A; Reynolds, Richmond, & Lowe, 2003). The AMAS-A includes 36 items that tap anxious symptomatology that is specifically tailored to the experience of adults over the age of 19. Like the RCMAS, the measure for which

the AMAS-A was adapted, the measure captures an anxiety total score (30 items; $\alpha = .89$), a separate Lie scale (6 items; $\alpha = .75$) as well as three distinct clusters of anxious features: Worry/Oversensitivity (W/O; 14 items; $\alpha = .80$), Physiological Anxiety (PA; 9 items; $\alpha = .82$), and Social Concerns/Concentration (SC/C; 7 items; $\alpha = .58$). Scores from the responses on the AMAS-A were summed to calculate PA, W/O, and SC/C subscales as well as total anxiety scores.

The AMAS-A was chosen for the measure of anxiety because, like the reuse of the YPI as the measure of psychopathy for the follow-up interviews, some degree of concern is warranted if the Revised Children's Manifest Anxiety Scale was used for both adolescence and adulthood. Again, the question remains as to whether using a measure designed for use in children and adolescents would be appropriate for use amongst a sample of young adults. Interestingly, the RCMAS was originally standardized and validated for use in children and adolescents ranging in age from 6-19 (Reynolds & Richmond, 1985; 2000), suggesting that the RCMAS may have some use in evaluating symptoms of anxiety for participants in late adolescence/early adulthood. However, some of the items in the measure make specific reference to an individual's parents as well as one's school work, which may hold less relevance to individuals who have reached early adulthood than for children and adolescents. Additionally, the issue remains as to whether or not one should use an alternative measure of anxiety, particularly one that was specifically developed for use in adults. Unlike the YPI, the authors of the RCMAS also developed the AMAS-A, which includes a similar set of items and maintains the same factor structure to that of the RCMAS and has been validated for use among individuals ages 19 and up. Considering these adaptations of the scale for more appropriate assessment of anxiety amongst adults and that the adult scale maintains a similar conceptualization of the anxiety construct to that of the

RCMAS, the present study used the AMAS-A as the index of anxiety in the follow-up assessment.

Victimization History. Experiences of victimization from others was assessed using an adapted version of the Exposure to Violence scale (ETV; Selner-Ohagan, Kindlon, Buka, Raudenbush, & Earls, 1998). The modified ETV features 7 items assessing victimization due to the antisocial and illegal activities of others (e.g. *Been beaten up, mugged, or seriously threatened by another person?*). Responses to each of the items were recorded dichotomously as either having been victimized (1; “Yes”) or not (0; “No”). The ETV has been shown to have high internal consistency (alphas ranging from .68 to .93). The ETV was assessed at the original study baseline interview to assess each youth’s level of offense involvement prior to entering the facility and also during the follow-up interview in adulthood. A variety of victimization score at baseline ($\alpha = .63$) and at follow-up ($\alpha = .75$) was computed by summing the number of times responses to each of the 7 questions that were endorsed, with higher scores indicating a greater variety of victimization.

Analyses

To begin, “psychopathic” and “non-psychopathic” adolescents and adults were discriminated using a research-based diagnostic cut-off on the YPI. Youth scoring greater than 121.5 on the YPI (youth who completed both the original and follow-up YPI assessment $n = 31$) were assigned to the high psychopathy group, as prior study has shown this score to correspond with a score of 30 on the PCL-YV (Caffman, Kimonis, Dmitrieva & Monahan, 2009), the traditional score used to diagnose psychopathy (Hare, 2003). The youth who scored below this cut-off (both original and follow-up completion $n = 48$) were assigned to the low psychopathy group. Psychopathy subtypes were then discriminated (both for the original study sample and

the follow-up sample) using median splits from total scores on the RCMAS. The choice in conducting median splits was mainly a practical one. Dividing the sample into half low-anxious and half high-anxious allows for maximization of sample size (and nearly equal groups) between primary and secondary psychopathy groups. There is also some evidence that meaningful distinctions between psychopathy subtypes can be made using median splits (see Kosson & Newman, 1995; Skeem, et al., 2003). Median-split techniques have long been employed by Newman and colleagues where a group of individuals high in psychopathic traits is split into two groups based on the median score of an anxiety measure. For example, Newman and his research group has reported that the “low-anxious” variant of psychopathy is distinguished by deficits in fear-potentiated startle (Sutton, Vitale, & Newman, 2002) and the modulation of responses to emotional stimuli (Hiatt, Lorenz, & Newman, 2002; Lorenz & Newman, 2002). Also, this “low-anxious” variant of psychopathy has been linked to cognitive processing deficits including poorer passive avoidance learning (Arnett, Smith, & Newman, 1997; Newman & Schmitt, 1998). Participants scoring below the median on the RCMAS (anxiety) were classified as the “primary psychopathy” group ($n = 19$) and those above the median will be assigned to the “secondary psychopathy” group ($n = 21$).

To address the primary study aim addressing the stability of psychopathic traits across the whole sample as well as differences between high/low psychopathy youth and psychopathy subtypes, analyses examined stability using the four methods described above: rank-order stability, mean-level stability, individual-level stability, and ipsative stability (also see Andershed, 2010; Roberts, Caspi, & Moffitt, 2001). First, in order to address rank-order stability, intra-class correlation estimates (ICCs) and Pearson’s r correlations were conducted between total, factor, and scale psychopathy scores on the YPI from initial assessment to the YPI

scores obtained from follow-up interview. These rank-order stability estimates were particularly important because they will allowed a near universal comparison of the present findings to all of the other studies gauging psychopathic trait stability, as rank order stability estimates are most common. These rank-order stability estimates were assessed separately for individuals in the “primary psychopathy”, the “secondary psychopathy” group, and the low-psychopathy group, which will allow for an estimation of the relative absolute agreement of psychopathy scores between these groups in the transition to adulthood. Estimates were also examined separately between “psychopathic” and “non-psychopathic” youth. I hypothesized that youth originally classified as “secondary psychopaths” at initial assessment will show more modest rank-order stability coefficients than youth identified as “primary psychopaths”. I also expected that youth high in psychopathy will show lower levels of rank-order stability than youth low in psychopathy, partially due to the reduced stability of psychopathic traits among secondary youth in this group.

Second, mean-level stability between the “primary” and “secondary” groups and between youth high and low in psychopathy were assessed using repeated-measures ANOVA. Though growth curve modeling using SEM would have been ideal (consistent with Kimonis, et al., 2010), this type of analysis was deemed unnecessary because a minimum of three assessments is required to gauge anything beyond linear change, which can be more simply addressed with ANOVA. The results from this line of analysis allowed for an estimation of whether or not “primary” and “secondary” participants increase or decrease in the quantity of their YPI scores from adolescence to adulthood at the aggregate level. Mean-level change across the entire sample was addressed using a paired-samples *t*-tests comparing scores in the original interview to those obtained in the follow-up interview. I expected that youth with secondary psychopathy

would show significant declines over the transition to adulthood, while youth with primary psychopathy would show little, if any decline in psychopathy scores. I also expected greater instability among the high psychopathy group as a result. Finally, I expected that psychopathy scores across the entire sample would decrease over time, given developmental inappropriateness arguments highlighting normative improvements in psychosocial maturity (Seagrave & Grisso, 2002; Hart et al., 2002).

Third, individual-level stability over time was addressed by calculating change scores using the Reliable Change Index (Christensen & Mendoza, 1986). RCI scores were calculated using the following formula:

$$RC = X_2 - \frac{X_1}{S_{diff}}$$

where X_1 represents a person's score at Time 1, X_2 represents that same person's score at Time 2, and S_{diff} is the standard error of difference between the two scores. This last statistic was calculated using the following formula:

$$S_{diff} = \sqrt{2(S_E)^2}$$

where S_{EM} is the standard error of measurement. The standard error of measurement was calculated as follows:

$$SEM = S\sqrt{(1 - r_{xx})}$$

where S is the pooled standard deviation and r_{xx} is the scale reliability score. After these RCI scores were calculated, the proportion of participants who significantly increased, decreased, or showed no change over time was documented across the entire sample. In addition RCI scores were used to compare differences between youth high and low in psychopathy and between “primary”, “secondary”, and low psychopathy groups using chi-square analyses. I hypothesized

that a substantial portion of youth across the entire sample would show significant declines in psychopathy over time. I also expected that a greater proportion of youth in the secondary group to evince significant declines over time than youth in the primary or low psychopathy groups.

Finally, ipsative change was to be assessed using logistic regression analyses. Such logistic regression analyses allowed me to examine longitudinal changes in an psychopathy subtype group status and high vs. low psychopathy group status from initial assessment to follow-up. In other words, the results from this line of analysis allowed for an examination of whether or not individuals in the “primary” and “secondary” psychopathy groups (and youth high in psychopathy) at initial assessment remained in that diagnostic category following the transition to adulthood. Median-splits on anxiety were to be used to initially discriminate between psychopathy subtypes at initial assessment. A similar process was conducted for participants scoring above the YPI cut off (121.5; Cauffman, et al., 2009) at follow-up interview and those below were classified as “non-psychopathic”. Logistic regression analyses were then conducted to determine the relative odds by which primaries and secondaries retain the same subtype classification at follow-up or change (including becoming diagnostically “low” in psychopathy). I expected that a substantial portion of youth classified as secondary psychopaths at initial assessments would lose that classification at follow-up. In comparison, I expected that primary psychopaths at initial assessment would be more likely to retain that classification at the follow-up assessment. I also expected that youth high in psychopathy would be more likely to maintain that classification in adulthood.

Analyses to address the predictive stability of adolescent psychopathic traits on adult psychopathy were addressed similarly to those presented in research by Lynam and colleagues (2007). Specifically, the analyses examined sensitivity (the conditional probability that an

individual was psychopathic in adolescence given that he was psychopathic in adulthood), specificity (the conditional probability that an individual was not psychopathic in adolescence given that he was low in psychopathy as an adult) and likelihood ratio (the odds that an individual identified as “psychopathic” in adulthood was also identified as a member of this category during adolescence) indices to see if adults who fell in a variety of diagnostic cut-points could be predicted using their scores in adolescence. Specifically, predictive stability analyses were applied to the “diagnostic” cut-off on the YPI (total greater than 121.5; Cauffman et al., 2009) as well as the top 30%, top 20%, and 10% of scorers at each assessment point. It was expected that scores on the psychopathy during adolescence would have poor diagnostic stability for youth above the varying cut-offs, but would perform well in identifying youth who would score below the cut-off at both time points.

A final series of analyses were conducted to determine if psychological variables that are theoretically relevant to discriminating psychopathy subtypes (e.g. anxiety and victimization) predicted variations in psychopathic trait stability over time. Analyses were conducted using multiple linear regression techniques, where adolescent levels of each of these characteristics were used to predict psychopathy change scores over time (adult YPI scores MINUS adolescent YPI scores). These analyses were also conducted controlling for adult levels of each of these variables. It was expected that higher scores on variables associated with secondary psychopathy (anxiety and victimization) in adolescence would predict greater declines in psychopathic traits over time.

Results

As a reminder, the main goal of the first study was to examine the stability of psychopathic traits from adolescence (youth originally recruited between the ages of 14 and 17)

to young adulthood (follow-up of the same individuals between the ages of 21 and 26). To give a diverse array of information with which to properly evaluate stability, several different indices were conducted: rank-order stability (using Pearson r and ICC estimates), mean-level stability (using paired t -tests and repeated-measures ANOVA), individual-level stability (using Reliable Change Index [RCI] scores), and ipsative stability (using logistic regression). While the key focus was to examine the differences in of stability between primary and secondary variants of psychopathy, the analyses first described the overall stability across the entire sample. The analyses then focused on differences between youth who scored above and below the ‘diagnostic’ cut-off (YPI score above 121.5; see Cauffman et al., 2009) in these stability estimates over time as well. Next, the differences between primaries, secondaries, and “non-psychopathic” controls were examined in these estimates of stability from adolescence to adulthood. The analysis also included estimates of diagnostic stability (using sensitivity, specificity, and likelihood ratios) to draw comparisons with research conducted by Lynam and colleagues (2007). Finally, the analysis attempted to identify theoretically-meaningful predictors of stability over time, given likely sample size constraints limiting power on the analyses comparing psychopathy subtypes.

Do Rank-Order Stability Estimates Suggest that Psychopathy is Stable Over Time?

Rank-Order Stability in YPI Scores for the Entire Sample

To address the rank-order stability of psychopathy across the entire sample a series of Pearson r and intra-class correlation coefficients ($ICCs$) were conducted between total and factor (Affective, Interpersonal, and Lifestyle Impulsivity) YPI scores between the adolescent and adult assessments (results presented in Table 2). Results from Pearson r rank-order stability estimates were conducted first. As a reminder, the Pearson product-moment stability coefficients

produced by test-retest rank-order stability analyses are interpreted using the following standards: r 's less than .30 are "low/poor", r 's between .30 and .49 are "adequate/moderate", and r 's between .50 and above are "good/high" (Andershed, 2010; Cohen, 1988). Results indicated that Pearson r correlations between psychopathy total scores in adolescence and adulthood revealed moderate stability over time across the whole sample ($r = .410, p < .001$). Pearson r estimates for psychopathy factor scores showed considerable variability in the stability of different aspects of psychopathy. Specifically, results showed adequate stability in Interpersonal ($r = .441, p < .001$) and Lifestyle Impulsivity ($r = .491, p < .001$) scores over time. Interestingly, Pearson r estimates also revealed low/poor stability for Affective aspects of psychopathy ($r = .185, p = .085$).

Rank-order stability estimates between adolescent and adult assessments of psychopathy across the entire sample were also conducted using intra-class correlation coefficients. As a reminder, standards for ICC stability estimates are more conservative: an ICC of less than .40 is "poor/low" between .40-.75 is "adequate/moderate", and above .75 is "good/high" (Parkerson et al., 1993). Results from ICC analyses were largely consistent with that of the previous rank-order stability estimates. Total psychopathy scores revealed adequate stability over time ($ICC = .406, p < .001$). Factor score stability estimates also exhibited a similar pattern. Interpersonal ($ICC = .438, p < .001$) and Lifestyle Impulsivity ($ICC = .486, p < .001$) factor scores showed adequate/moderate stability in the transition to adulthood, while Affective psychopathic features showed poor stability over the 6 to 8 year period between assessments ($ICC = .185, p < .05$).

In sum, results from rank-order stability estimates did not show very strong stability from adolescence to adulthood, with total psychopathy scores only showing moderate stability over time. The results also indicated that Affective features of psychopathy were the most unstable

over time, whereas Interpersonal and Lifestyle Impulsivity features were somewhat more consistent over time. Thus, these estimates are not considerably high, given the Youth Psychopathic Traits Inventory has purported to assess relatively stable aspects of personality.

Rank-Order Stability in YPI Scores between Youth High and Low in Psychopathy

Next, it was important to consider if there were any differences in stability over time for individuals scoring high (above a score of 121.5 on the YPI Total; see Cauffman et al., 2009) and low in their psychopathic traits during the adolescent assessment. It is important to note that while 92 participants completed both the adolescent and adult data collection periods, only 88 individuals had complete data on both assessments of the YPI. Of those 88 individuals, 40 individuals scored above the cut-off on YPI Total scores and were assigned to the high psychopathy group. The remaining 48 individuals were assigned to the low psychopathy group.

To address differences in rank-order stability between High and Low psychopathy groups, a series of Pearson r s and ICCs were completed separately for both groups. Results from this line of analysis are reported in Table 3. For consistency, the results from analyses using the high psychopathy group will be reported first, followed by those for the low psychopathy group. The correlation between adolescent and adult total psychopathy scores showed moderate stability over time ($r = .386, p < .05$), though somewhat less so than the full sample. Lifestyle Impulsivity features were also adequately stable for the high psychopathy group ($r = .358, p < .05$) but Interpersonal features actually showed high levels of stability in the transition to adulthood ($r = .520, p < .001$). Most interestingly, results indicated that for the high psychopathy group, scores on the Affective factor of the YPI at the adolescent assessment were essentially uncorrelated with scores at the adult assessment ($r = .001, p > .10$), indicating very poor stability over time.

Intra-class correlation coefficients tended to suggest somewhat worse stability for the high psychopathy group. Given the more conservative standards, the *ICC* results for the total score indicated poor/low stability of these traits over time ($ICC = .331, p < .05$). Intra-class correlation coefficient estimates also revealed poor stability of Lifestyle Impulsivity features ($ICC = .347, p < .05$) and a near-zero estimate for Affective features ($ICC = .001, p > .10$), suggesting that for individuals high in psychopathy during adolescence, these traits were not very stable into adulthood. Only Interpersonal features appeared to be relatively consistent over time, indicating adequate stability ($ICC = .499, p < .001$).

When examining Pearson *r* correlations for the low psychopathy group, however, the results reveal even less stability over time. Specifically, the correlation between adolescent total psychopathy scores and adult total psychopathy scores revealed low/poor stability ($r = .298, p < .05$). Pearson *r* stability estimates for the low psychopathy group also showed poor stability in Affective ($r = .251, p = .085$) and Interpersonal ($r = .180, p > .10$) features over time. For the low psychopathy group, only Lifestyle Impulsivity features revealed moderate stability from adolescence to adulthood ($r = .493, p < .001$).

Intra-class correlation coefficient estimates for the low psychopathy group again revealed similar findings with regard to stability. In general, results indicated very low stability over time, particularly for YPI total scores ($ICC = .298, p < .05$) as well as Affective ($ICC = .248, p < .05$) and Interpersonal features of psychopathy ($ICC = .179, p > .10$). For the low psychopathy group, only Lifestyle Impulsivity features of psychopathy ($ICC = .492, p < .001$) revealed moderate levels of stability from adolescence to adulthood.

In general, the results from rank-order stability estimates reveal relatively poor stability for individuals both high and low in psychopathy during adolescence. Furthermore, these

stability estimates were particularly poor for individuals scoring low in psychopathy. Nevertheless, Affective features for the high psychopathy group revealed near-zero stability estimates. Finally, there were variations between the low and high psychopathy groups in the most stable features of psychopathy over time, with those high in psychopathy having the highest stability of Interpersonal features, while Lifestyle Impulsivity traits were most stable over the roughly seven-year follow-up amongst the low psychopathy group.

Rank-Order Stability in YPI Scores for Psychopathy Subtypes

To address the central study aim regarding psychopathy subtype differences in psychopathic trait stability over time, it was necessary to discriminate subtypes using the theoretical perspective proffered by Karpman (1948; 1955). As a reminder, Karpman (1955) discriminated a secondary variant of psychopathy that derived their “psychopathic” features from an underlying psychopathology—namely anxiety and neurosis—derived from environmental insult, producing an emotional dysregulation distinct from the traditional conceptualization of psychopathy (see Cleckley, 1941). As such, using total psychopathy scores from the adolescent assessment, individuals scoring above the cut-off (Total YPI score greater than 121.5) who also took part in the follow-up interviews were selected into the high psychopathy group ($n = 40$). Given the small sample size for this high psychopathy group, a median split on RCMAS scores (also taken during the adolescent assessment) was completed to define those low (primary) and those high (secondary) in anxiety. The resulting median split produced 19 primary psychopathy and 21 secondary psychopathy participants. The remaining 48 participants who completed the follow-up assessment and scored below the psychopathy cut-off during adolescence were assigned to the control/low psychopathy group. These three groups (primary, secondary and control) were used in the remaining analyses of stability.

Though these small sample sizes suggested that there would be limited power to address some of these stability questions, power analyses (using G*Power) indicated that the sample size presents with enough power to detect medium-to-large effect sizes for rank-order, mean-level, individual-level, and ipsative stability analytic strategies. While this is not a large enough sample to detect small effects, data are still being collected to help increase the number of participants within each of these psychopathy subtype groups. For now, the data used in the present study appear adequate enough to identify meaningful differences between groups for each of these indices of stability.

As before, rank-order stability analyses to describe differences between each of the psychopathy groups were conducted using Pearson r and ICC analyses. As the low psychopathy group was already described in detail in the section above, the rank-order stability estimates will only be described for the primary and the secondary groups in this section, though any tables that are presented below will include the low psychopathy group for comparison purposes. The results from these rank-order stability analyses are presented in Table 4 below.

Pearson r stability estimates for total psychopathy scores were adequate/moderate for both the primary ($r = .394, p = .095$) and secondary ($r = .359, p > .10$) groups, though the estimates were slightly lower for the secondary group. Consistent with expectations, the secondary group also had lower stability estimates for Interpersonal ($r = .430, p = .052$, adequate stability) and Lifestyle Impulsivity ($r = .293, p > .10$, low stability) traits than the primary group (Interpersonal $r = .624, p < .01$, high stability; Lifestyle $r = .402, p = .088$, adequate stability). However, an interesting development occurred when examining stability estimates for Affective psychopathy features. Though stability estimates were particularly low for the secondary group ($r = .119, p > .10$), results from the primary group actually revealed a negative estimate ($r = -$

.374, $p > .10$), indicating that higher total psychopathy scores in adolescence predicted lower scores in adulthood. In other words, Affective traits were particularly unstable for the primary group and the divergent directions of the estimates likely account for the near-zero stability estimate for Affective features across the full high psychopathy group described above.

As might be expected, the results from intra-class correlation estimates largely mirrored those of Pearson r , though the conservative standards for stability strength with ICC estimates painted a slightly less optimistic picture. For example, results from the $ICCs$ for total psychopathy scores indicated that both primaries ($ICC = .325, p = .081$) and secondaries ($ICC = .314, p = .077$) had poor stability in these traits from adolescence to adulthood. Stability estimates were also poor for Lifestyle Impulsivity among both groups, though the estimates were lower for the secondary ($ICC = .288, p = .097$) compared to the primary ($ICC = .325, p < .05$) group. Intra-class correlation stability estimates were moderate for Interpersonal features of psychopathy, but again were higher amongst the primary group ($ICC = .598, p < .01$) when compared to secondaries ($ICC = .413, p < .05$). Finally, stability estimates for Affective psychopathy traits were very low amongst the secondary group ($ICC = .118, p > .10$), but results for the primary group also indicated a negative association between adolescent and adult assessments of these traits ($ICC = -.245, p > .10$).

In sum, the results generally confirm expectations that the secondary group would express less stability in their traits when compared to the primary group, particularly for Interpersonal and Lifestyle Impulsivity features, though stability of total psychopathy traits were largely poor for both groups. Further, while Affective psychopathic traits revealed very poor stability among both groups, the negative association between adolescent and adult Affective

features for the primary group is particularly concerning for the utility of these traits to predict adult expressions of the disorder.

Do Mean-Level Stability Estimates Suggest that Psychopathic Traits Decrease from Adolescence to Adulthood?

Mean-Level Stability in YPI Scores across Entire Sample

The next line of analysis focused on mean-level stability from adolescence to adulthood. In other words, did youth in the present study increase or decrease in their psychopathic traits over time? To address this question, a series of paired-samples *t*-tests were conducted, with adolescent and adult psychopathy (total and factor) scores paired with one another. Once again, the results from this line of analysis revealed evidence of instability in psychopathic features over time. In particular, participants showed, on average, a nearly eleven-point decline in their total psychopathy scores in the transition to adulthood ($t[87] = 4.496, p < .001$). These declines in psychopathic traits also translated to psychopathy factor scores as well, with participants showing significant decreases in Affective ($t[87] = 5.208, p < .001$), Interpersonal ($t[87] = 2.538, p < .05$), and Lifestyle Impulsivity ($t[87] = 3.876, p < .001$) across the 6 to 8 year follow-up. In all, these results reveal that youth in the present study endorsed fewer psychopathic traits across the board in adulthood when compared to adolescent levels, indicating further evidence of instability in the transition to adulthood.

Mean-Level Stability in YPI Scores between Youth High and Low Psychopathy

To address mean-level stability, a series of repeated-measures ANOVA analyses were conducted to determine if high and low psychopathy groups differed in their change in psychopathic traits over time. Though repeated-measures ANOVA analyses identify main effects of group status on levels of psychopathic traits, this information is less meaningful, as these groups have already been discriminated by their psychopathy scores during adolescence.

Of central importance is the interaction term between psychopathy group status and time, to see if the high and low psychopathy groups have differences in the rate of change in their traits from adolescence to adulthood. Examining total psychopathy score change over time revealed a significant interaction between psychopathy group status and time ($F[1,86] = 28.841, p < .001$), with the high adolescent psychopathy group showing more decline in these traits through the transition to adulthood (see Figure 2). A similar pattern was observed for each individual factor score as well, with the high psychopathy group showing more marked declines in Affective ($F[1,86] = 14.864, p < .001$), Interpersonal ($F[1,86] = 20.084, p < .001$), and Lifestyle Impulsivity features ($F[1,86] = 16.862, p < .001$) from adolescence to adulthood. In sum, the results from mean-level stability analyses indicated that the adolescent high psychopathy group showed a greater decrease in their psychopathic traits through the transition to adulthood, suggesting more trait instability amongst this group.

Mean-Level Stability in YPI Scores between Psychopathy Subtypes

Repeated-measures ANOVA was also conducted to determine differences between psychopathy subtypes (and low psychopathy controls) in mean-level stability. The subtype groups were first compared in the mean-level stability of total levels of psychopathic traits from adolescence to adulthood. Results revealed a significant group by time interaction term ($F[2, 85] = 14.253, p < .001$) suggesting significant group differences in change over time. A graphical representation of the estimated marginal means between each of the psychopathy groups derived from the repeated-measures ANOVA are represented in Figure 3 below. As one can see, both the primary and secondary groups showed significant changes in their total psychopathy scores over time, whereas little to no change occurred for the control group. Post-hoc pairwise comparisons also revealed significant differences between both the primary ($LSD = 5.303, p <$

.001) and secondary ($LSD = 6.719, p < .001$) groups when compared to controls, but showed that the two high psychopathy groups did not differ in their rates of change over time ($LSD = 1.012, p > .10$).

It was then necessary to determine if the psychopathy groups differed in their mean-level change over time in each of the psychopathy factors. Results from each of these analyses mirrored those derived from YPI Total score comparisons. In every case, a significant interaction between psychopathy group and time revealed significant group differences in Affective ($F[2, 85] = 7.379, p = .001$; see Figure 4), Interpersonal ($F[2, 85] = 9.926, p < .001$; see Figure 5), and Lifestyle Impulsivity ($F[2, 85] = 14.253, p < .001$; see Figure 6) trait change from adolescence to adulthood. As can be seen in the figures, both the primary and secondary groups showed declines in Affective, Interpersonal, and Lifestyle Impulsivity features over time, whereas the low psychopathy group showed little appreciable change in the transition to adulthood. In addition, post-hoc pairwise comparisons indicated that the primary and secondary groups differed from controls in their rates of change in each of the psychopathy factor scores from adolescence to adulthood (all $ps < .01$). However, similar to the total score change analyses, the primary and secondary groups did not differ in their rates of decline in Affective ($LSD = 1.254, p > .10$), Interpersonal ($LSD = 0.542, p > .10$), and Lifestyle Impulsivity ($LSD = 0.723, p > .10$) traits from adolescence to adulthood.

Taken together, these results suggest that both the primary and secondary groups showed considerable mean-level instability in their psychopathic traits from adolescence to adulthood, both in terms of total- and factor-level scores. Specifically, both groups showed significant decrements in their YPI Total, Affective, Interpersonal, and Lifestyle Impulsivity features over time. However, while both of these groups showed significant differences in their rates of

change over time from the low psychopathy group, they did not differ from one another, suggesting that primaries and secondaries evinced similar mean-level instability over time.

Do Individual Level Stability Estimates Suggest that a Substantial Portion of Youth Show Changes in their Psychopathic Traits Over Time?

Individual-Level Stability in YPI Scores for the Entire Sample

The next set of analyses addressed individual-level change throughout the entire sample, to get an understanding of how each individual increased, decreased, or showed no appreciable change in psychopathic traits (both total and factor scores) from adolescence to adulthood. In order to complete this, a Reliable Change Index (RCI) score was calculated for each individual. This type of analysis allows the researcher to standardize each individual level of change and examine the proportion of individuals who decrease, increase, or show no significant change in each trait examined over time. Any individuals with an RCI score above 1.96 or below -1.96 can be classified as having increased or decreased, respectively, in the trait being assessed. The number of individuals who fell into each change category (significant decrease, no change, and significant increase), resulting from this line of analysis, is presented in Table 5 below.

These results paint a somewhat different picture regarding stability of psychopathic traits from adolescence to adulthood. In general, the results indicate that most individuals who completed both assessments of psychopathy showed no significant change over time in their psychopathic traits. This was particularly true for Affective and Lifestyle Impulsivity traits of psychopathy, where 78.4% and 71.6% of the sample, respectively, did not show appreciable change over time. Participants were more likely to show significant changes over time in total YPI scores and YPI Interpersonal features, but a substantial proportion of individuals stayed similar in these traits from adolescence to adulthood (55.7% and 59.1%, respectively). However, when individuals did show significant changes in psychopathic traits in the transition to

adulthood, they were more likely to show decreases in total (31.8% decreased), Affective (20.5% decreased), Interpersonal (28.4% decreased), and Lifestyle Impulsivity (23.9% decreased) features over time. In fact, only 1.1% and 4.5% of participants increased in their Affective and Lifestyle Impulsivity traits (respectively) over time. In sum, these findings suggest that most individuals did not exhibit a significant change in their psychopathic traits from adolescence to adulthood, but when such changes did occur, individuals were more likely to show declines across the roughly seven-year follow-up.

Individual-Level Stability in YPI Scores between Youth High and Low in Psychopathy

Though the results from rank-order and mean-level stability revealed some important differences between youth high and low in psychopathy during adolescence, it was also necessary to determine if there were any group differences in their individual-level stability. In other words, the question remains as to whether individuals within each group had any significant change in their psychopathic traits over time and if the groups differed in the number of individuals who had changed. In order to address this question, Reliable Change Index scores were calculated to determine if individuals within each group significantly decreased, significantly increased, or showed no appreciable change over time. Then, a series of chi-square analyses were conducted to determine if these patterns of change differed between the psychopathy groups.

Reliable Change Index scores comparing high and low psychopathy groups in total YPI scores are presented in Table 6 below. The results indicated that individuals between the low and high psychopathy groups significantly differed in the numbers of individuals who changed in their total levels of psychopathic traits over time. In fact, half of the high psychopathy group significantly decreased over time, whereas no one among this group showed significant increases

over time. In comparison, only 16.7% of the low psychopathy group decreased in their psychopathic traits from adolescence to adulthood and 22.9% actually increased in their traits over time.

The high and low psychopathy groups were also compared in terms of their individual-level stability across each of the three factors of psychopathy. The results of these analyses are also presented in the Table 6 below. The results from these comparisons revealed that the high and low psychopathy groups indeed differed in the proportion of individuals who changed in their Interpersonal and Lifestyle Impulsivity traits from adolescence to adulthood, but did not differ in the change in Affective features over time. Specifically, 45% of the high psychopathy group decreased in their Interpersonal traits and 37.5% decreased in their Lifestyle Impulsivity features over time compared to 14.6% and 12.5% of the low psychopathy group, respectively. By comparison, 20.8% of the low psychopathy group actually increased in their Interpersonal features and 8.3% increased in their Lifestyle Impulsivity traits, whereas none of the high psychopathy group increased in Interpersonal traits and only one increased in their Lifestyle Impulsivity features. In sum, these results suggest that individuals that were high in psychopathy during adolescence were more likely than the low psychopathy group to decrease in their Total, Interpersonal, and Lifestyle Impulsivity YPI scores over time, but the low psychopathy group was more likely to increase in these traits from adolescence to adulthood. It may be interpreted that youth high in psychopathy had nowhere to go but down (e.g. regression to the mean) and that youth low in psychopathy had more room to increase in these traits over time. However, given that a substantial portion of both groups of youth yielded no appreciable change in their psychopathic traits from adolescence to adulthood, it would seem that this is not the case for all youth in the study.

Individual-Level Stability in YPI Scores between Psychopathy Subtypes

Though no differences between the primary and secondary groups were observed with respect to mean-level change over time, it was necessary to determine if these groups differed in the proportion of individuals who changed within these groups over time, so as to potentially account for the observed group differences in rank-order stability estimates. As such, Reliable Change Index scores were compared between groups to examine if primaries, secondaries, and controls differed in the proportion of individuals who significantly increased, significantly decreased, and showed no significant change over time in their YPI total and factor scores. Beginning with psychopathy total scores, the proportions of each Reliable Change Index group subdivided by each subtype is presented in Table 7 below. Chi-square analyses comparing all of the psychopathy subtypes on Reliable Index Change Scores for total psychopathic traits revealed significant differences between the groups. Specifically, a greater proportion of primaries (42.1%) and secondaries (57.1%) showed significant declines in their total psychopathic traits over time when compared to the low psychopathy group (16.7%). In addition, whereas none of the primaries and secondaries increased in their total psychopathy scores from adolescence to adulthood, almost 23% of the control group did so. However, chi-square analyses revealed no significant differences between primary and secondary groups in the proportions of individuals falling into each RCI group ($\chi^2[1] = 0.902, p > .10$).

The psychopathy subtype groups were also compared in their individual-level stability across each of the three factors of psychopathy. The results of these analyses are also presented in Table 7 below. The results from these comparisons revealed that the psychopathy subtypes differed in the proportion of individuals who changed in their Interpersonal and Lifestyle Impulsivity traits from adolescence to adulthood, but did not differ in the change in Affective

features over time. Specifically, 42.1% of primaries and 47.6% of secondaries decreased in their Interpersonal traits compared to 14.6% of controls. Further, 42.1% of primaries and 33% of secondaries decreased in their Lifestyle Impulsivity features over time 12.5% of the low psychopathy group. By comparison, 20.8% of the low psychopathy group actually increased in their Interpersonal features and 8.3% increased in their Lifestyle Impulsivity traits. Only one individual within the secondary psychopathy group showed any significant increases in psychopathy scores over time (Interpersonal features). Finally, no significant differences were observed between primaries and secondaries in the proportions of individuals who changed over time in Interpersonal ($\chi^2[1] = 1.173, p > .10$) or Lifestyle Impulsivity traits ($\chi^2[1] = 0.327, p > .10$). In sum, these results suggest that individuals that were high in psychopathy (no observed differences between primaries and secondaries) during adolescence were more likely than the low psychopathy group to decrease in their Total, Interpersonal, and Lifestyle Impulsivity YPI scores over time, but the low psychopathy group was more likely to increase in these traits from adolescence to adulthood.

Do Ipsative Stability Estimates Suggest that “Psychopathic” Youth and Psychopathy Subtypes Retain Their Classification in Adulthood?

Ipsative Stability in YPI Scores between Youth High and Low in Psychopathy

Next, the intention was to determine if the high and low psychopathy groups exhibited any differences in their person-centered, or ipsative stability over time. As a reminder, analyses testing person-centered change allow the research to focus on multiple dimensions of change over time in an individual, rather than examining individual trait changes separately. As such, this type of analysis would be able to determine if the high and low psychopathy groups differed in the likelihood that they would also fall within the high psychopathy group (scoring above 121.5 on the YPI total score) as an adult. As such, a logistic regression analysis was conducted

to determine whether or not this was the case. The results revealed that the high psychopathy was indeed over four times more likely to be classified as “psychopathic” as adults than youth in the low psychopathy group ($b = 1.421, p < .05, OR = 4.141, 95\% CI = 1.327; 12.923$). In other words, though there appears to be considerable instability in psychopathic traits across the sample from adolescence to adulthood, particularly for the high psychopathy group, they were still more likely to also be classified as “psychopathic” in adulthood.

Ipsative Stability in YPI Scores between Psychopathy Subtypes

Finally, a series of logistic regression analyses were conducted to determine if any significant differences could be determined between psychopathy subtypes in their ipsative stability from adolescence to adulthood. In other words, an attempt was made to determine if primaries, secondaries, and controls differed in their likelihood of being high in psychopathy as adults. Though it would also be ideal to determine if the subtypes differed in the likelihood of falling within the same subtype category in adulthood, the small sample size who scored above the psychopathy cut-off at the follow-up period ($n = 18$) suggested that further subdivision of this group would limit power too drastically. The results revealed that both the primary ($b = 1.379, p < .05, OR = 3.969, 95\% CI = 1.041; 15.146$) and secondary ($b = 1.459, p < .05, OR = 4.300, 95\% CI = 1.176; 15.722$) groups were roughly four times more likely to be classified as “psychopathic” in adulthood than individuals in the low psychopathy group. However, results revealed that primaries were no more likely to score as “psychopathic” as adults than secondaries ($b = -.080, p > .10, OR = .923, 95\% CI = .245; 3.477$). Taken together, the results suggested that high levels of psychopathic traits in adolescence could be useful in identifying individuals likely to remain high in these features in adulthood, but [categorically] discriminating psychopathy subtypes provided little incremental utility.

Do Adolescent Levels of Psychopathic Traits Reliably Predict Psychopathic Traits in Adulthood?

Another important question was whether or not the Youth Psychopathic Trait inventory would be better at identifying individuals who will be high in psychopathic traits in adulthood, or better at identifying those who would not become/remain “psychopathic” as adults. In other words, the intention of this final analysis was to determine if the assessment of psychopathic traits in adolescence was better at assessing the true positive rate (sensitivity; the conditional probability that an individual was psychopathic in adolescence given that he was psychopathic in adulthood) or the true negative rate (specificity; the conditional probability that an individual was not psychopathic in adolescence given that he was low in psychopathy as an adult). To address this question, a series of sensitivity, specificity and likelihood ratio (the odds an individual was “psychopathic” in adulthood if identified as “psychopathic” during adolescence) tests to determine if the sample scored above the YPI Total score threshold in adolescence and adulthood at four different cut-off points: the “diagnostic” psychopathy level (score above 121.5 on the YPI Total Score), the top 10%, the top 20%, and the top 30% of scores on the YPI Total.

Results from the diagnostic stability analyses are reported in Table 8. As can be seen in the table, the estimates for sensitivity and specificity were indeed higher in the present study than in prior research on the subject (see Lynam et al., 2007). Using the “diagnostic” cut-off for high psychopathy in both adolescence and adulthood, the results revealed a higher sensitivity (conditional probability of high psychopathy in adolescence given high psychopathy in adulthood) than specificity (conditional probability of low psychopathy in adolescence given high psychopathy in adulthood) suggesting that the diagnostic cut-off actually performs quite well in identifying individuals high in psychopathy at both time points. This “diagnostic” cut-off was actually comparably better at identifying individuals above the cut-off at both time points

than identifying individuals below the cut-off in both adolescence and adulthood. However, the story changes when considering the top 30%, top 20%, and top 10% of psychopathy scorers at both time points. Scores on the specificity indices at each of these cut-points got progressively higher at more stringent delineation points, suggesting that identifying low scorers at both time points was increasingly better at these higher percentage cut-offs. The opposite story was observed for sensitivity, indicating that more stringent percentage cut-offs produced poorer identification of individuals high in psychopathy at both time points. In sum, these results suggest that psychopathy scores are better at identifying individuals who remain low in psychopathy over time when compared to their utility in identifying individuals who express high levels of psychopathy both in adolescence and adulthood.

Finally, the positive likelihood ratio presented in the table gives the odds that an individual identified as “psychopathic” in adulthood was also identified as a member of this category during adolescence. Standards defined by Grimes & Schulz (2005) indicate the magnitude of likelihood ratios to indicate the utility of using diagnostic cut-offs to successfully predict individuals high in a particular measure at two time points. The further away the likelihood ratio deviates from a value of one, the stronger the probability of diagnostic prediction. They define likelihood ratio values between 2 and 5 as small predictive utility, likelihoods between 5 and 10 as moderate predictive utility, and likelihood ratios above 10 to show high predictive utility (Grimes & Schulz, 2005). Overall, save the 20% cut-off, the likelihood ratios suggest low levels of predictive utility for high levels of psychopathy at both time points amongst the present sample. All told, these results again suggest that psychopathic features measured in both adolescence and adulthood may be better at identifying individuals

who score low in these measures at both times than those who consistently score highly on the same measures.

Do Theoretically-Relevant Features of Youth Development and Secondary Psychopathy Predict YPI Stability from Adolescence to Adulthood?

As can be ascertained from the previous set of analyses, categorically discriminating psychopathy subtypes failed to provide much more information in understanding developmental instability of these traits as youths transitioned to adulthood. However, a couple of caveats are in order. First, primary and secondary subtypes did differ to some degree in their rank-order stability of traits over time, suggesting that there may have been underlying features discriminating these groups that could play a role in developmental instability masked by categorical delineation. Second, the limited sample size of primary ($n = 19$) and secondary ($n = 21$) subtypes who completed the follow-up assessment may have limited the power necessary to make meaningful comparisons. Though power analyses revealed that the present sample provided enough statistical power to detect medium-to-large effect sizes, any small-sized differences between groups might have been missed. As a result, a final series of analyses were conducted to determine if psychological variables that are theoretically relevant to discriminating psychopathy subtypes (e.g. anxiety, victimization and trauma) predicted variations in psychopathic trait stability over time.

To address this question, a series of linear regression analyses were conducted to determine if any of psychosocial difficulties, measured in adolescence, significantly predicted psychopathic trait change over time, controlling for baseline levels of psychopathic traits. Psychopathic trait change over time was operationalized using change scores subtracting adolescent YPI scores from those assessed in adulthood. Analyses examining the impact of adolescent anxiety (see Karpman, 1948; 1955) revealed that higher RCMAS scores predicted

even greater reductions in psychopathic traits from adolescence to adulthood ($\beta = -.323, t = -3.165, p < .01$). In fact, this impact of adolescent anxiety was still significant even after adjusting for adult levels of anxiety and when including baseline levels of psychopathy. However, no significant interaction between psychopathy and anxiety was observed ($\beta = 0.065, t = 0.701, p > .10$). The lack of a significant interaction term, but continued main effect for anxiety suggests that higher levels of anxiety in adolescence amplify declines over time independently of psychopathic traits. In other words, these results appear confirm that difficulties with anxiety in adolescence would translate to developmental instability in psychopathic traits.

Theoretical perspectives offered by Karpman (1955) and Porter (1996) also highlight exposure to environmental insults such as abuse and trauma—particularly from one’s family—as important etiological factors in the development of secondary psychopathy. Results examining the impact of exposure to victimization ($\beta = .253, t = 2.421, p < .05$) and maltreatment from family members ($\beta = .226, t = 2.148, p < .05$) on psychopathic trait change revealed that higher levels of both experiences in adolescence translated to less reduction in psychopathic traits over time. When controlling for adult exposure to victimization, early victimization experiences still predicted less reduction in psychopathic traits over time ($\beta = .203, t = 1.854, p = .065$). Though this is inconsistent with expectations, these results suggest that early traumatic experiences may translate to more intransitive difficulties with psychopathic traits over time.

Discussion

At present, there exists a spirited debate on the application of psychopathic traits—originally conceptualized among adults (see Cleckley, 1941)—to children and adolescents. This process has been termed the “downward extension” (see Skeem & Cauffman, 2003; Vitacco &

Vincent, 2006), and researchers differ on the developmental appropriateness of assessing psychopathic features within younger populations. Some researchers argue that the application of psychopathic traits to children and adolescents is inappropriate given 1) personality features are generally unstable until adulthood (Roberts & DelVecchio, 2000) and 2) some of the central features of psychopathy specifically tap normative features of psychosocial maturity that tend to improve as a youth ages (see Edens et al., 2001; Hart et al., 2002; Seagrave & Grisso, 2002; Skeem & Cauffman, 2003). Others suggest that psychopathic traits are appropriate given that they can be reliably distinguished from ‘normal’ adolescent development (Frick, 2002; Lynam & Gudonis, 2005; Salekin et al., 2008), they often relate to theoretically-relevant variables (such as delinquency; Lynam & Gudonis, 2005; Salekin et al., 2008), and they can be used to identify youth in need of intervention to reduce continued antisocial behavior (Frick, 2002; Salekin et al., 2008). With this debate in mind, the purpose of this study was to empirically determine whether or not psychopathic traits—assessed in adolescence—would show a reasonable degree of stability as these youth made the transition to adulthood between six to eight years later. To examine this issue broadly, the analyses first described the overall stability across the entire sample, in order to draw comparisons with prior research (see Barry et al., 2008; Blonigen et al., 2006; Forsman et al., 2008; Loney et al., 2007; Lynam et al., 2007; Lynam et al., 2008; Muñoz & Frick, 2007; Muñoz et al., 2008; Rutherford et al., 1999). Further, it was important to determine if youth classified as “psychopathic” during adolescence would show differential stability over time compared to youth manifesting lower levels of these traits. The most important goal of this study, however, was to determine if youth presenting with the primary and secondary variants of psychopathy showed differences in the relative permanence of these traits from adolescence to adulthood.

The results from the present study generally tend to support the developmental inappropriateness argument of the adolescent psychopathy debate. First, the results indicated that psychopathic traits generally presented low-to-moderate stability and showed decreases in the levels of these traits over time, particularly with regard to Affective features (e.g. callousness and unemotionality). Second, youth who scored above the “diagnostic” cut off during adolescence tended to exhibit worse stability of psychopathic traits (in mean-level and individual-level stability) from adolescence to adulthood than youth who scored below this cut-off. In addition, predictive stability analyses indicated that psychopathic traits in adolescence performed better at identifying youth who remained low in their expressions of psychopathic traits in both adolescence and adulthood, rather than classifying those at risk of being “psychopathic” across time. Third, the results echoed the findings of Kimonis and colleagues (2010), suggesting that youth with primary and secondary psychopathy display similar patterns of trait instability from adolescence to adulthood, at least when using categorical discrimination of subtypes. Finally, when examining the impact of the characteristics associated with secondary psychopathy (e.g. anxiety/neuroticism, trauma and abuse) on trait stability, these features either produced sharper decreases (from anxiety) or produced less change (from victimization) in psychopathy levels over time. In fact, results indicated that the reduction produced by high levels of adolescent anxiety was particularly pronounced for youth high in psychopathy, suggesting greater instability for secondary psychopathy. These core findings are discussed in more detail below.

Relatively Limited Stability of Psychopathic Traits in General

Support for the developmental inappropriateness argument begins from analyses examining the stability of psychopathic traits across the entire juvenile offender sample.

Specifically, as derived across multiple indices of stability, the overall findings indicated that psychopathic traits tended to be somewhat variable from adolescence to adulthood. Generally speaking, the findings from rank-order estimates revealed that total psychopathic trait levels presented moderate stability from adolescence to adulthood. Nevertheless, these estimates do not appear to be particularly high, especially given the Youth Psychopathic Traits Inventory has been designed to assess the seemingly *stable* aspects of personality proffered by Cleckley (1941; 1976). There are a couple of reasons for this seeming lack of agreement over time. First, research has indicated that rank-order stability estimates decrease as the time interval between initial and follow-up assessments increase. In addition, periods reflecting developmental transitions show somewhat less personality stability (Fraleigh & Roberts, 2005; Grilo et al., 2004; Johnson et al., 2000; Roberts & DelVecchio, 2000; Roberts et al., 2006). Personality features tend to increase in continuity at early ages but remain relatively unstable until an individual reaches early- to middle-adulthood (Roberts & DelVecchio, 2000). Given the roughly seven-year interval between the original study and follow-up interviews, and the fact that these personality stability estimates include the transition from adolescence to adulthood, one would expect these estimates to diminish in this study. However, the stability of psychopathy total scores appears to be somewhat lower ($r = .410$; $ICC = .406$) when compared to research pertaining to the Five-Factor model of personality (Average $r = .570$; Average $ICC = .678$) (Roberts & DelVecchio, 2000; Roberts et al., 2001; Robins et al., 2001).

Consideration of rank-order stability estimates for YPI factor scores indicate that some features of psychopathy are somewhat more stable than others. On one hand, rank-order stability estimates for interpersonal and lifestyle impulsivity features of psychopathy revealed adequate/moderate stability of these traits from adolescence to adulthood. These estimates

somewhat higher than the estimates observed for psychopathy total scores. Research examining the stability of various components of psychopathy over time have often identified interpersonal features (from non-PCL series measures) as one of the most stable of psychopathic traits (see Blonigen et al., 2006; Forsman et al., 2008; Muñoz et al., 2008; contrary evidence by Lynam et al., 2008). In addition, research examining normative personality structures has revealed relatively good stability of related interpersonal features such as extraversion and social potency (Roberts et al., 2001; Roberts et al., 2006; Robins et al., 2001). However, the results also revealed poor stability of affective (e.g. callousness, unemotionality, and remorselessness) features of psychopathy from adolescence to adulthood. This is important, as callous-unemotional traits have been widely regarded within the recent research literature as the core developmental precursor of psychopathic traits in adulthood. This is largely due to the similar association between these features and behavioral correlates of psychopathy in adolescence and adulthood (see Frick et al., 2005). Research and theory in this domain were influential enough to warrant the inclusion of callous-unemotional traits as a specifier of conduct disorder in the DSM-V (American Psychiatric Association, 2013) to identify a particular group of adolescent delinquents at risk for long-term behavioral problems and adult personality disorder pathology (e.g. psychopathy and antisocial personality disorder). The results from the present study tend to echo other psychopathy stability research highlighting affective features as some of the most unstable components of the construct longitudinally (Forsman, et al., 2008; Lynam et al., 2008; Rutherford et al., 1999). Research from the normative personality research literature also appear to support this finding, as these studies highlight agreeableness and negative emotionality as comparatively unstable compared to other traits (Roberts et al., 2001, 2006; Robins et al. 2001).

These findings imply that affective features of psychopathy, when assessed in adolescence, may not be a very reliable indicator of similar problems during adulthood.

Results from mean-level stability analyses paint an even stronger picture of instability in psychopathic traits from adolescence to adulthood. Specifically, the results indicated significant declines in total and factor-level psychopathic traits from adolescence to adulthood. In addition, the results from individual-level stability in the present study revealed that a substantial proportion of the sample showed significant changes in their YPI total and factor scores (between 21.6% to 44.3% of the sample) from the adolescent assessment (ages 14 to 17) to the adult assessment (ages 21 to 26). Thus, these findings suggest that concerns regarding the implicit assumption that psychopathy features would display a lack of permanence over time are grounded in truth (see Edens & Vincent, 2008; Seagrave & Grisso, 2002; Skeem & Cauffman, 2003). Some researchers have questioned the “developmental appropriateness” of psychopathic traits for adolescents given that some features that signify psychopathy in adulthood (e.g. irresponsibility, impulsivity, poor behavioral controls, and stimulation seeking) can be viewed as normative and temporary characteristics of adolescence (see Hart et al., 2002; Seagrave & Grisso, 2002; Skeem & Cauffman, 2002). It would also seem to suggest that the concerns regarding the “developmental inappropriateness” of psychopathic traits might not simply be limited lifestyle impulsivity features, given all facets of psychopathy showed average declines over time. This trait decrease was particularly high for callous-unemotional traits. Indeed, mean- and individual-level instability in adolescent psychopathic research studies have also been highlighted in previous research (Blonigen et al., 2006; Forsman et al., 2008; Loney et al., 2007; Lynam et al., 2008; Muñoz et al., 2008).

A considerable amount of recent research attention has been devoted to examining psychopathy and its correlates among younger populations with the idealized intention of identifying youth in need of early interventions to reduce future risk (see Edens et al., 2001; Frick, 2002; Seagrave & Grisso, 2002). This practice is particularly due to the abundance of research establishing a strong connection between adult manifestations of psychopathy and risk for violence and offending (see Edens et al., 2001; Forth & Book, 2010; Vincent, 2006; White & Frick, 2010). A growing body of research has also shown connections between juvenile psychopathy and indices of delinquency in adolescence (Dolan & Rennie, 2006; Edens & Campbell, 2007; Hicks, Rogers, & Cashell, 2000; Olver, Stokdale, & Wormith, 2009). However, this practice also rests on the assumption that the overall concepts and diagnostic features of psychopathy as conceptualized in adult populations are similarly attributable to and present in children and adolescents. Extending this concept, it would also suggest that the affective, social, and behavior problems associated with expressions of psychopathy in adolescence would yield similar deficits as youth reach adulthood. The general lack of strong estimates for any of these stability estimates would seem to counter this claim.

Though the majority of evidence from these stability estimates indicate that psychopathic traits are poorly to adequately stable over time, it was somewhat surprising to note that a substantial portion of youth showed no appreciable change in their total psychopathic traits from adolescence to adulthood using individual-level stability estimates. This was particularly true for affective and lifestyle impulsivity traits, where 78.4% and 71.6% of the sample, respectively, did not show appreciable change over time. In addition, a substantial portion of youth in the present study showed no meaningful change in psychopathy total and interpersonal psychopathy scores from adolescence to adulthood (55.7% and 59.1%, respectively). These estimates from the RCI

scores suggest that change in psychopathic traits are more of the exception rather than the rule. However, it could be counter argued that nearly 30% of youth are likely to show significant changes in psychopathic traits from adolescence to adulthood. Given that scores on psychopathy measures are used to make decisions with long term consequences (see Seagrave & Grisso, 2002), the fact that one third of youth would have been misclassified and possibly sanctioned more harshly is not an acceptable error rate. To make use of risk assessment tools to make legal determinations with confidence, much less instability should be observed. Nevertheless, youth with more intransitive features of psychopathy over time (those who did not change) likely represent the population that Frick (2002) and Salekin and colleagues (2008) suggest would benefit from the application of directed intervention efforts to reduce psychopathic trait expression and promote desistence from continued delinquent behavior.

Taken together, the results from group-level stability estimates (rank-order and mean-level stability) highlight significant concerns regarding the long-term stability of psychopathy as youths make the transition from adolescence to adulthood. Though rank order estimates were generally moderate, these estimates were still lower ($r = .410$; $ICC = .406$) than those observed in normative personality research (Average $r = .570$; Average $ICC = .678$) (Roberts & DelVecchio, 2000; Roberts et al., 2001; Robins et al., 2001). Further analysis of individual-level stability suggests that psychopathic characteristics *can* show a small degree of stability from adolescence to adulthood, but when such changes did occur (and a small but substantial proportion of youth did reveal within-person change), individuals were more likely to show declines in their psychopathic traits over time. The findings pertaining to psychopathic trait stability are a good example of the developmental psychopathology principle of *heterotypic continuity*, which holds that the expression of a trait or a meaning of a behavior may change

across the lifespan (Cicchetti & Rogosch, 1996). This principle is also borne out by research highlighting growth and change observed in prior research for both normative personality (Fraleley & Roberts, 2005; Roberts & DelVecchio, 2000; Roberts et al., 2001; 2006; Robins et al., 2001) and psychopathic features (Blonigen et al., 2006; Forsman et al., 2008; Lynam et al., 2008; Muñoz et al., 2008) in the transition to adulthood appears to be the norm, rather than the exception to the rule. Coming back to the developmental appropriateness debate, the barely adequate rank-order stability and the observation of considerable mean- and individual-level instability across the roughly seven-year follow-up, tend to support contentions regarding normative improvements in psychopathy deficits (Edens et al., 2001; Hart et al., 2002; Seagrave & Grisso, 2002; Skeem & Cauffman, 2003).

Greater Instability of Psychopathic Traits for those High in Psychopathy

The potential for variable stability between youth who score high on measures of psychopathy and youth who score low on these measures is of notable concern to the “downward extension” of psychopathic traits from adolescence to adulthood, particularly if youth high in psychopathy evince more unstable profiles than low-scoring youth. As mentioned previously, one of the intentions of applying the construct of psychopathy to the adolescent population is to identify individuals at greatest risk for adult psychopathy and antisocial behavior problems so as to properly allocate intervention resources to reduce this risk (see Frick, 2002; Salekin et al., 2008). However, if high levels of psychopathy in adolescence do not reliably translate to higher levels of psychopathy in adulthood (e.g. greater trait instability for high psychopathy youth) the underlying assumption of enhanced risk may come under question.

Interestingly enough, the results from rank-order stability appeared to lend some degree of empirical credence to these concerns. For instance, the results from rank-order stability

estimates actually revealed low-to-moderate absolute agreement of psychopathic traits over time for both the high and low adolescent psychopathy groups. In fact, Pearson r and ICC coefficients for YPI total and Affective psychopathy scores highlighted “poor” stability for both the high and low psychopathy groups. Rank-order estimates for affective features within the high psychopathy group were essentially zero, suggesting that affective traits within this group had no utility whatsoever in predicting their later affective traits in adulthood. Additionally, lifestyle impulsivity traits for the high psychopathy group were generally poor, whereas these same features were moderately stable for youth low in psychopathy (the opposite pattern was observed for interpersonal features of psychopathy). This is of particular importance as lifestyle impulsivity features are the same traits that are raised as the greatest concern for the applicability of the psychopathy construct in childhood and adolescence (see Seagrave & Grisso, 2002) and are directly related to the implicit assumptions regarding risk for antisocial and delinquent behavior. These findings appear to indicate that, when disentangling “psychopathic” from “non-psychopathic” youth in adolescence, these same traits perform quite poorly in predicting the levels of these same traits in adulthood.

Findings from mean-level and individual-level stability estimates between youth high and low in psychopathy echoed this general conclusion. Results from repeated-measures ANOVA indicated that youth in the high psychopathy group exhibited significant declines over time, whereas the low psychopathy group showed no changes, on average, in these traits from adolescence to adulthood. The same overall pattern was observed for each of the psychopathy factors over time. Further, individual-level stability analyses produced a similar story. With the exception of the Affective factor of the YPI, a greater proportion of youth in the high psychopathy group (between 27.5% and 50%) presented with significant declines over time in

total, interpersonal, and lifestyle impulsivity traits when compared to the low psychopathy group (between 12.5% and 20%).

Diagnostic stability estimates also revealed some significant concerns regarding the capacity for high levels of psychopathic traits in adolescence to predict high levels of psychopathic traits in adulthood. Findings pertaining to the sensitivity (conditional probability of high psychopathy in adolescence given high psychopathy in adulthood) and specificity (conditional probability of low psychopathy in adolescence given high psychopathy in adulthood) of varying YPI total score cut-off criteria generally revealed better specificity of psychopathy scores. In other words, the varying cut-offs tended to be better at identifying youth who would remain low in psychopathic traits from adolescence to adulthood, rather than revealing youth with consistently high levels of psychopathic traits over time. Further, likelihood ratio calculations revealed that high levels of psychopathic traits in adolescence had “low” predictive utility for comparable trait levels in adulthood.

According to Lynam and colleagues (2007), depending on one’s relative perception of the “pejorative” nature of the psychopathy label and the rationale for one’s assessment of psychopathic traits for adolescent offenders, the interpretation of these findings may differ. For those who intend to identify “a potential developmental precursor to a destructive adult syndrome” (p. 161) that would promote the direction of more intensive intervention efforts to prevent this negative outcome (see Frick 2002; Salekin et al., 2008), these findings can be interpreted in a positive light. Except at the most stringent cut-point (top 10%) high psychopathy scores in adolescence have a better-than-chance probability of being identified as psychopathic in adulthood. However, consideration of forensic psychologists who may use this type of measure to inform decision-making within a legal context (e.g. harsher sentencing; see concerns

raised by Seagrave and Grisso, 2002) would lead to a different conclusion. Given sensitivity findings, which highlight a considerably high probability of false positives in the present study, this error-rate would likely be harmful for a substantial number of youth. For example, an adolescent identified as high in psychopathy might receive a harsher sentence as a result than another youth with low levels of psychopathy, even though both would eventually be identified as non-psychopathic in adulthood. This potential for negative outcomes could potentially outweigh the potential positives.

The low-to-moderate stability of traits among the high psychopathy group serves to support one of the central concerns raised by researchers on the application of psychopathy to children and adolescents. Specifically, researchers have raised concerns about the stability of juvenile psychopathy across the life course, indicating that some youth may “grow out of” such psychopathic features as impulsive and delinquent behavior as they make the transition to adulthood (Edens & Vincent, 2008; Seagrave & Grisso, 2002). Even the original conceptualization offered by Cleckley (1941; 1976) suggests that restraint must be taken when applying psychopathic features to earlier ages as youth are more likely than adults to produce unacceptable and antisocial behavior that may mimic the actions of the “true” adult psychopath. But youth may grow out of these problems as they mature. He suggests that until a persistent pattern of behavior across contexts (and as might be extrapolated, across developmental periods) can be observed with a particular youth, they should not be classified with the psychopathy label.

The concern focused on the issue of stability of juvenile psychopathic traits reflects a key developmental concern in the “downward extension”: *multifinality* (Hart, et al., 2002; Vincent & Hart, 2002). Multifinality stresses, as a practical example, the idea that what may appear to be an adolescent form of psychopathy could lead to a multitude of different outcomes in adulthood

besides psychopathy. Relevant to this issue, personality research by Clark (2005) has suggested that personality profiles of individuals with personality disorder pathology (e.g. psychopathy) tend to be more unstable over time than individuals with more normative personality features. Clark (2009) explains that individuals with personality disorder (PD) commonly have other comorbid disorders (e.g. depression, anxiety, and disruptive disorders) which serve to exacerbate PD pathology. Thus, any improvements in these connected disorders would consequently result in changes to expressed PD symptomatology. In addition, she suggests that some features of personality disorder criteria tap more acute and unstable behaviors, rather than stable personality traits (echoing concerns raised by Edens & Vincent, 2008; Seagrave & Grisso, 2002), which may show improvements over time due to changes in maturity levels. This is particularly important given research connecting psychosocial maturity and psychopathic traits. A study by Skeem and Cauffman (2003) revealed negative associations between adolescent levels of psychopathic traits (on the PCL-YV and YPI) and indices of psychosocial maturity (e.g. temperance, time perspective, social perspective, and resistance to peer influence). Given that youth problems with psychosocial immaturity tend to decline as youth make the transition to adulthood (Cauffman & Steinberg, 2000), it is possible that improvements in psychopathic traits over time may have been due to normative improvements in psychosocial maturity in the transition to adulthood. These concerns appear to be implicitly supported by the practices of the American Psychiatric Association, as both the DSM-IV and DSM-V (American Psychiatric Association, 2000; 2013) caution against the application of personality disorder pathology to non-adults, except in the most extreme of cases.¹

Of course, these results also raised a significant statistical concern that warrants addressing. In particular, the significant declines over time among the high psychopathy group

may have been the result of ceiling effects and potential regression to the mean. In other words, the high psychopathy group had nowhere to go but down in their psychopathic traits over time, therefore the findings observed in the present study were the result of a statistical anomaly rather than meaningful change in the orientation and levels of their traits. However, there are a couple of problems with this perspective. Namely, if regression to the mean was actually the cause of the variations in psychopathic traits among the high psychopathy group at one extreme, which would represent an underlying problem with the measurement of psychopathy in this study, than one would also expect to see a parallel process to have been exhibited by the low psychopathy group at the other extreme. Given that the low psychopathy group showed no significant change over time in any index of psychopathic traits, this finding serves to diminish confidence in a regression-to-the-mean argument. In fact, when a post-hoc selection the bottom third of scorers on the YPI during adolescence was conducted (to serve as a comparison low extreme group) and scores were compared using paired-*t* tests, no significant changes over time were observed among this more specialized group except for Interpersonal features of psychopathy (where significant increases over time were observed for this group).

Arguments in favor of regression to the mean would also suggest that comparisons of internal-consistency reliability (e.g. Cronbach's α) would reveal differences between youth high and low in psychopathy. Specifically, the more unreliable scores are (expected for youth high in psychopathy), the more susceptible this group would be to regression to the mean. In order to address this concern, a series of Cronbach's α reliability analyses were conducted for YPI total and factor scores separately for youth high and low in psychopathy (see Table 9). The results indicated slight differences between the high- and low-psychopathy groups. As noted in the table, the reliability statistics were stronger for the low psychopathy group at baseline, and more

robust for the high psychopathy group at follow-up. The relative similarity in reliability scores between the two groups at both assessments help to alleviate concerns about regression to the mean. Though it is possible that regression to the mean may have played a role in the trait declines for youth high psychopathy group, this interpretation seems somewhat unwarranted for most of the psychopathy indices.

Despite the findings highlighting greater instability of overall levels of psychopathic traits for youth high in psychopathy it was also necessary to determine whether or not “psychopathic” status in adolescence would also predict the same “diagnostic” status in adulthood. Results from ipsative logistic regression analyses offered some degree of support for this claim. Youth that scored high in psychopathic traits during adolescence were more than four times more likely to score above the “diagnostic” cut-off in adulthood than youth low in psychopathy. However, it is also important to note that for youth who completed both the adolescent and adult interviews, the total number of participants classified as “psychopathic” as adults represented less than half (45%) of the number of adolescents that were placed in the high psychopathy group. As such, the overall declines in psychopathic traits across the entire sample resulted in a substantial portion of youth falling below the diagnostic threshold in the transition to adulthood.

Nevertheless, these results suggest that psychopathic trait stability for youth high in psychopathy tends to be lower when compared to youth who score low in psychopathy during adolescence. Not only do youth high in psychopathy show greater declines in psychopathic traits over time, “diagnostic” levels of psychopathic traits in adolescence tend to produce a considerable amount of error when used to predict high levels of psychopathic traits in adulthood. In general, it would seem that researchers who question the “downward extension” of

psychopathy may have a point, particularly when it comes to the issue of multifinality (see Hart et al. 2002). The lack of ability to observe more than adequate (rank-order) stability among “psychopathic” youth and the large portion who declined over time (individual-level) seems they could be just as likely to manifest another form of disorder in adulthood or show no adult abnormalities as they may be to express the adult features of psychopathy. This lack of reliability in the profile of youth high in psychopathy would seem to counter arguments that these measurements can be used to confidently distinguish ‘abnormal’ and ‘normal’ development through the transition to adulthood (Frick, 2002; Lynam & Gudonis, 2005; Salekin et al., 2008).

Similar Patterns of Instability between Primary and Secondary Psychopathy Groups

A final concern for the present study was to determine whether or not youth with secondary (high anxious) psychopathy would show greater instability in their psychopathic traits over time when compared to the prototypical, primary subtype. Considering the theoretical perspectives proffered by Karpman (1941; 1955), it would seem reasonable to assume that this would be the case. According to this theory, the primary distinction between primary and secondary variants of psychopathy rests in the underlying emotional features for each presentation of the disorder (Karpman, 1941). Whereas the classical presentation of psychopathic traits results from a fundamental lack of emotion and absence of conscience, the emotional deficits related to secondary psychopathy actually reflect a manifestation of neurosis and anxiety that produces a similar pattern of behavior (to the primary subtype), but an emotional volatility and lack of impulse control. In other words, Karpman (1941) indicates that the secondary subtype is actually “misdiagnosed” as psychopathic, because their pattern of behavior is the result of psychopathology, not personality.

The importance of this perspective to the issue of stability is clear. For instance, Clark (2009) pointed to comorbid psychopathology, such as anxiety disorders, as a potential moderator of the stability of personality disorders over time. Subsequent changes in this comorbid symptomatology would serve to produce parallel changes in the expression and levels of personality disorder pathology. Research pertaining to the stability of normative personality features (including neuroticism and negative emotionality) has served to support this contention. Specifically, research addressing the stability of Five-Factor models of personality revealed normative improvements in expressions of neuroticism from adolescence to adulthood (Roberts et al., 2001; Robins et al., 2001). In addition, other research found that lower levels of negative emotionality at initial assessments of personality also yielded higher levels of profile stability at follow up (Roberts et al., 2001). This would suggest that increasing levels of negative emotionality (or neuroticism) for youth with secondary psychopathy would likely produce less consistent personality profiles from adolescence to adulthood. This would be especially problematic given that detractors of the “downward extension” suggest that adolescent forms of psychopathic traits tend to be difficult, if not impossible to assess reliably (see Hart et al., 2002).

However, the results from the present study provided limited support for the contention that psychopathy subtypes would express differences in their relative stability over time, at least when making categorical distinctions (e.g. median split in adolescent levels of psychopathy) between youth with primary and secondary psychopathy. For instance, youth with primary and secondary psychopathy showed no appreciable differences in the rank-order stability of their overall levels of psychopathic traits over time. Further, though youth with secondary psychopathy evinced somewhat less stable (rank-order) profiles of interpersonal and lifestyle impulsivity features over time, youth with primary psychopathy presented with worse stability of

their affective traits in the transition from adolescence to adulthood (though both groups yielded “poor” affective stability over time; see Cohen, 1988). Given that the secondary group is proposed to be more emotionally volatile than individuals with primary psychopathy (see Karpman, 1955), one would also expect that this group would also present with worse stability, but this was not the case.

Results from mean-level stability analyses revealed little variation in change from adolescence to adulthood between the primary and secondary groups. Though youth from both groups showed significant declines over time in their total and factor scores on the YPI, and were more likely to evince changes over time than youth with low levels of psychopathy in adolescence, their patterns of change were strikingly similar. Findings from individual-level stability calculations produced a comparable pattern. Though the primary and secondary had a greater proportion of youth who had significant decreases in their total, interpersonal, and lifestyle impulsivity scores over time than the low-scoring comparison group, the proportions of youth who changed did not differ between the psychopathy subtypes. Finally, the results from ipsative stability analyses indicated the primary and secondary groups were more likely to be classified “psychopathic” than comparison youth, but the subtypes did not differ from one another in the likelihood of such a classification.

Despite the lack of support for deviations between primary and secondary youth produced from the analyses in this study, these findings share some similarity to results observed by other research in this domain. Notably, research examining the two-year stability of psychopathic traits and antisocial behavior between subtypes of juvenile offenders by Kimonis and colleagues (2010) produced strikingly similar patterns of change between youth with primary and youth with secondary psychopathy. Using growth curve modeling, the researchers

found that both primary and secondary groups had similar decreases in these traits from baseline to follow-up. Though youth with secondary psychopathy did differ from youth with primary psychopathy in theoretically meaningful ways, such as their levels of hostility and exposure to abuse, it would appear that these differences were not due to variations in their trait stability over time.

However, concerns raised by Clark (2009) suggest that patterns of personality disorder stability is quite varied depending on whether these disorders and related correlates are measured dimensionally (e.g. continuous variables) or categorically (e.g. group categorization). As such, it was assumed possible that specific focus factors relevant to distinctions between psychopathy subtypes (e.g. anxiety and victimization) might be better suited in predicting change over time. When analyses were conducted using dimensional scores on these correlates, variations in change over time conformed to expectations from research and theory. For instance, the results from these analyses indicated that higher levels of anxiety during adolescence translated to greater reductions in psychopathic traits in the transition to adulthood. This would imply that as youth with secondary psychopathy are purported to express more difficulties with anxiety that produce emotional volatility (see Karpman, 1941; Kimonis et al., 2010), manifestations of these problems would indeed translate to greater instability in psychopathic traits over time for the secondary subtype. Of course, higher levels of anxiety also translated to greater declines in psychopathic traits for youth low in psychopathy. The results also indicated that youth exposed to more negative features of their environment (in this case, victimization), showed less decline in their psychopathic traits over time. Given individuals with secondary psychopathy are also expected to show greater sensitivity to their environment (see Karpman, 1955; Mealey, 1995; Porter, 1996; Lynam et al., 2008) and tend to report more varied histories of such negative

experiences throughout their lives (see Kimonis et al., 2010; Tatar et al., 2012) these individuals might simultaneously be expected to show greater stability in their psychopathic traits over time.

In sum, the results comparing psychopathy subtypes in the relative stability of their psychopathic traits indicated some interesting findings. In particular, the results indicated that when divided into distinct categories of primary and secondary psychopathy, these youth show similar patterns of (in)stability from adolescence to adulthood. However, when considering the impact of features connected to the etiology of secondary psychopathy, these correlates indeed had an impact on change in psychopathic traits over time. Specifically, greater neuroticism translated to less stability over time, whereas negative aspects of the environment appeared to inflate stability in these traits over time. As such, it would seem important to consider these factors that delineate psychopathy subtypes as potential moderators of change when examining the stability of psychopathic traits across time.

Limitations

While the findings of the present study serve to highlight several key phenomena to consider when addressing the stability of psychopathic traits from adolescence to adulthood, there are several limitations that may impact the interpretations derived from this study. First, and foremost, all of the core variables included in the present study were assessed using participant self-reports. The concern with such a methodological practice is that shared method covariance bias may have introduced a confound to the findings observed in the present study. In other, words, the strength of the associations between variables may have been partially due to these similar assessment strategies, which would reduce confidence in the interpretations presented here. Future research should consider the use of laboratory-based assessments of emotional dysregulation (e.g. anxiety) and ratings from collateral respondents to reduce the

potential for such a bias. However, it must also be stated that using a different measure of psychopathic traits will impact future research observations to some degree. As there is a considerable degree of contention between researchers in the domain of psychopathy on which traits are central to the construct (see Skeem & Cooke, 2010), using different measures of psychopathy will result in a different profile of traits to be examined, and thus might yield different results. Therefore, researchers should be mindful of how psychopathic traits are operationalized by the measure(s) used in their research when interpreting their findings and should be sure to stay consistent in their measurement of psychopathy (e.g. the same trait profiles) at each point of assessment. In fact, the use of a single measure of psychopathy should be considered somewhat of a strength, given variations in the operationalization of psychopathy between measures are more likely to influence stability estimates than consistent measurement across time.

The relatively small sample size of individuals who participated in the follow-up interview also served as a limitation for the present study. The limited number of participants likely reduced the levels of power to detect small, but meaningful effects. In addition, though data collection is still ongoing, the current attrition rate (~75% of the full study sample has not completed the follow-up) is very high and could have impacted the findings observed in the present study. On a related note, the vast majority of individuals who had participated in the follow-up were incarcerated at the time of interview (~87%). While selection and attrition bias were not observed, the findings from the present study are most directly attributable to juvenile offenders who were unsuccessful in avoiding the justice system in adulthood and may not generalize to youth who may have desisted from further delinquent behavior or had not been exposed to further justice system contact. In addition, offenders who maintain justice system

contact across time also represent the most important group for identification in forensic assessment practices. The considerable instability in psychopathic traits from adolescence to adulthood within this population highlight a potential problem in using psychopathy as a risk assessment tool, even within this population. Despite this, future research should seek to include a greater proportion of comparable youth within the community during adulthood to draw more comprehensive conclusions. The present study was also limited by the fact that only two assessments of psychopathy were conducted, making it impossible to address curvilinear patterns of change over time, which may offer a more complete picture of psychopathic trait change over time. Future research should include more than two assessments of psychopathy to address this concern.

Conclusions and Implications

Taken together, the findings from the present study offer some important considerations for our understanding of the psychopathy construct during adolescence. As previously mentioned, a large contingent of researchers have called into question the “developmental appropriateness” of psychopathic traits to children and adolescence, suggesting that many of these features (e.g. irresponsibility, impulsivity, stimulation seeking) actually reflect normative and temporary features of adolescence and would likely show instability over time as youth mature into adulthood (Cleckley, 1941; 1976; Edens & Vincent, 2008; Hart et al., 2002; Seagrave & Grisso, 2002; Skeem & Cauffman, 2003). As a whole, the results from the present study lend credence to these concerns, as youth across the entire sample tended to show low-to-moderate stability and overall decreases in their psychopathic traits over time. Of potential greater importance were the findings highlighting greater instability in psychopathic traits over time for youth with higher levels of these traits during adolescence as compared to sub-

syndromal youth. These findings seem to call into question one of the core purposes of the assessment of psychopathy for younger populations: to identify youth at risk for continued psychopathic symptomatology and antisocial behavior as adults (see Edens et al., 2001; Frick, 2002; Seagrave & Grisso, 2002). In fact, this rationale for juvenile assessment of psychopathy has resulted in the practice of using these measures during forensic legal assessments to ascribe future dangerousness, and as a consequence, inform legal decision-making such as waiver to adult court and denial of treatment (Seagrave & Grisso, 2002).

Despite this potential misapplication of psychopathy measures to a population that may show questionable stability of these traits over time, this potential for change is not all bad news. In fact, supporters of the application of psychopathic traits to younger populations suggest that this capacity for change offers hope “that these traits are more changeable earlier in development, and hence less stable, thereby allowing for more effective prevention and treatment” (Frick, 2002; p. 250; also see Lynam, 2002; Salekin et al., 2008). Lynam and colleagues (2008) indicate that it is important for research in this area to identify the potential moderators of stability and change over time in psychopathic traits so that targeted intervention efforts can be applied. Drawing from the present study findings and theoretical perspectives pertaining to the discrimination of psychopathy subtypes (see Karpman, 1941; 1955; Mealey, 1995; Porter, 1996), one potential area of focus would be to address youths’ underlying psychopathology (such as anxiety/neuroticism). Further, focusing treatment resources towards addressing traumatic and abusive histories might also serve to reduce continued psychopathic pathology and delinquent risk potential. Treatment efforts geared toward addressing multiple social and environmental contexts at once (such as multisystemic therapy [MST]; Henggeler,

1999; Henggeler, Melton, & Smith, 1992; Henggeler, Rodick, Borduin, Hanson, Watson, et al., 1986) would be particularly useful to this end.

Though earlier identification of persistent behavioral problems is the core goal of psychopathy assessment in childhood and adolescence, researchers and practitioners should engage in this practice with prevention and intervention in mind. Application of psychopathic traits within the legal context to deny such access or to inform dangerousness to support harsher punishments and longer sentences would likely have significant long-term consequences for youth that should not be the intention of youthful psychopathic trait assessments (see Seagrave & Grisso, 2002). Not only does this practice serve to extend the pejorative belief of “psychopaths” as untreatable and dangerous to children and adolescents (see Frick, 2002), but the present research suggests that this practice would be erroneous, as youth evinced considerable change in their psychopathic traits from adolescence to adulthood.

Chapter 3:

Psychopathy in the Transition to Adulthood: Subtypes, Stability, and Offending

Abstract

Objective: This study addresses whether the developmental instability of psychopathic traits from adolescence to adulthood observed in Study 1 have any bearing on the predictive utility of psychopathy for short- and long-term offending. **Method:** Differences in the risk for short- (prior to and during juvenile incarceration) and long-term (between 6 to 8 years later) antisocial behavior and aggression were examined between youth high and low in psychopathy in a sample of offenders, both while incarcerated as juveniles (N = 373) and in prisons or the community as adults (N = 94). Risk variations attributable to components of psychopathy subtypes were also addressed. **Results:** The results produced three key findings. First, adolescent psychopathic traits performed well in identifying enhanced risk for offending and aggression in the short-term, highlighting greater amounts of delinquency for youth high in psychopathy and for the secondary subtype. Second, youth levels of psychopathic traits—and by extension, characteristics of psychopathy subtypes—do not show meaningful long-term predictive utility for antisocial behavior in adulthood. Finally, changes in psychopathic traits are better suited in predicting youth risk for offending behavior and aggression in adulthood. **Conclusion:** Based on these findings, psychopathic trait instability has clear implications for risk assessment practices. Thus, the use of these assessments in forensic and legal practice may not be the correct setting for the application of psychopathy for risk-assessment purposes. Instead, psychopathy measures may be better suited for intake assessments geared toward identifying intervention targets. Multiple assessments of psychopathy across time should also be conducted to have a more longitudinal picture of risk potential across time.

Measures of Psychopathy Are Commonly Used to Predict Violence and Other Criminal Behavior

Media descriptions of individuals who engage in particularly violent acts are often described as “psychopaths” (Paulsen, 2010) and recently, books like *The Psychopath Test* (Ronson, 2011) have gained popularity, allowing members of the general public to be watchful for the telltale signs of potential “psychopaths” who wish to harm them. In fact, these assumptions have some empirical basis. In both the adult and youth literature, scores on measures of psychopathy—particularly features related to antisocial deviance—often show positive associations with violence and other criminal behavior as well as scores on risk assessment tools (Blackburn & Coid, 1998; Forth & Book, 2010; Gretton, Hare, & Catchpole, 2004; Hare, 1983; Hare & McPherson, 1984; Forth, Hart, & Hare, 1990; Kimonis, et al., 2010; Olver et al., 2009).

Due to this increased attention, assessments of psychopathy have become increasingly common in the criminal and juvenile justice contexts and have begun to shape legal decisions regarding individuals who score highly on such measures (see Jones & Cauffman, 2008; Seagrave & Grisso, 2002; Viljoen, et al., 2010). For instance, Jones and Cauffman (2008) presented a sample of juvenile court judges assessing judicial perceptions and recommendations to a hypothetical offender’s case. Their results indicated that the presence of psychopathic traits in the hypothetical offender influenced judges’ perceptions of treatment amenability ($\eta = .12$) and dangerousness ($\eta = .25$), and recommendations for prison placement ($\eta = .11$). Therefore, some have raised concerns regarding the downward extension and assessment of adult psychopathic traits among juveniles (Edens et al., 2001; Hart et al., 2002; Seagrave & Grisso, 2002). Nevertheless, a wealth of research has examined and sometimes revealed that scores on psychopathy measures are associated with engagement in violence and other antisocial behavior

across a variety of age groups and in a number of different contexts. Further, those who support the extension of psychopathic traits to adolescents have agreed with the concerns regarding the connection between psychopathy and violence and offending for use in justice decisions, but have also suggested that such findings can and should be used to help provide targeted intervention for these youth (Lynam, 2002; Salekin, et al., 2008).

Studies Examining the Association Between Psychopathy and Violence

Though meta-analytic data suggests that measures of psychopathy, particularly the Psychopathy Checklist, poorly predict institutional violence and infractions (though still significant) in adults (see Guy, Edens, Anthony, & Douglas, 2005), research examining this association among incarcerated adolescents has yielded more supportive findings (Edens & Campbell, 2007; Hicks et al., 2000; Dolan & Rennie, 2006). For example, a meta-analysis conducted by Edens and Campbell (2007) examined the utility of the Psychopathy Checklist in predicting institutional misconduct and violence in 15 studies of incarcerated youth. The results of their analyses revealed that PCL total scores were significantly related to youth engagement in aggression ($r = .25$), physical violence ($r = .28$), and misconduct in general ($r = .24$) while incarcerated. Analysis at the factor-level, also revealed significant associations between psychopathy factor scores and misconduct, but associations tended to be stronger for Factor 2 (impulsive antisociality) as opposed to Factor 1 (affective/interpersonal) characteristics, for aggression ($r = .34$ vs. $r = .22$), physical violence ($r = .37$ vs. $r = .24$), and general misbehavior ($r = .28$ vs. $r = .21$). Overall, the findings revealed that higher scores on measures of psychopathy for incarcerated youth (particularly those related to Factor 2) are associated with greater difficulty in behavioral adjustment to the incarceration context.

In contrast to empirical study on the association between psychopathy and institutional offending, research has been much more definitive when examining the association between psychopathy and criminal/violent recidivism in the community context, revealing that adolescents and adults scoring highly on such measures are at greater risk for such behaviors than individuals without psychopathic features (e.g. Blackburn & Coid, 1998; Gretton et al., 2004; Hare & McPherson, 1984). For instance, a meta-analysis of 49 studies conducted by Olver and colleagues (2009) examined the comparative utility of youth versions of psychopathy measures (the Level of Service Inventory [YLS/CMI; Hoge & Andrews, 2002] and the PCL-YV) and a purpose-built risk assessment tool (Structured Assessment of Violence Risk for Youth [SAVRY]; Borum et al., 2006) in predicting youths' general, non-violent, and violent recidivism. The results of their analysis indicated that the YLS/CMI, PCL-YV, and SAVRY all showed significant associations with youth engagement in general (r 's = .32, .28, and .32, respectively) and violent (r 's = .26, .25, and .30, respectively) recidivism. While they also found significant associations between each of the measures and non-violent recidivism, the correlations for the YLS/CMI ($r = .29$) and SAVRY ($r = .38$) were considerably stronger than that of the PCL-YV ($r = .16$). Other research has also found that individuals scoring highly in measure of psychopathy are also more likely to be arrested and convicted for violent offenses than non-psychopathic individuals (Hare, 1983; Forth et al., 1990). In light of this research, it also appears that increasing psychopathy scores among youth yield greater risk for violence and recidivism post-incarceration.

However, research related to the utility of psychopathic traits in predicting violence and offending in the long-term have yielded inconsistent findings. Some research has indicated that psychopathic traits actually have considerable long-term predictive value, particularly across

developmental stages (Gretton, et al., 2004; Lynam, Miller, Vachon, Loeber, & Stouthamer-Loeber, 2009; Schmidt, Campbell, & Houlding, 2011). For example, Schmidt and colleagues (2011) examined the utility of youth offender assessments of the YLS/CMI, PCL-YV, and SAVRY in predicting adult recidivism ten years later ($n = 133$). The results of their study indicated that all three measures predicted recidivism with moderate-to-large effect sizes (AUCs ranging from .66 to .79). In addition, Muñoz and Frick (2007) assessed psychopathic features using the APSD among 91 male youth (grades 5-9; mean age at baseline = 13.4) and observed that these scores significantly predicted self-reported delinquency and violence ($r = .50$ and $r = .43$) and parent-reported conduct problems and aggression ($r = .62$ and $r = .47$) at 3-year follow up. Other studies, have also observed significant predictive utility of psychopathy (on the PCL-YV) in determining rates of recidivism in adulthood (Gretton, et al., 2004 [10-year follow up]; Lynam, et al., 2009 [13-year follow-up]). The findings from this line of research (e.g. Gretton, et al., 2004; Lynam, et al., 2009; Schmidt, et al., 2011) offer at least some modest support for the idea youth scoring highly on measures of psychopathy may be at particular risk for violence and recidivism within the community, and this risk may have the potential to persist for extended periods of time.

Nevertheless, other research has yielded evidence that counters this claim (e.g. Cauffman et al., 2009; Edens & Cahill, 2007; Leistico, Salekin, DeCoster, & Rogers, 2008; Olver et al., 2009; Stockdale, Olver & Wong, 2010). For instance, a study conducted by Cauffman and colleagues (2009) examined the relative utility of the PCL-YV, YPI, and the NEO Psychopathy Resemblance Index (NEO-PRI; Lynam & Widiger, 2007) in predicting offending amongst a sample of 1,170 serious juvenile offenders (ages 14-17 at baseline) at 6-month, 12-month, and 3-year follow-ups. While their results indicated that each of the measures were significantly

related to self-reported offending at 6-months (r 's ranging from .07 to .23) and for the most part at 12-months (r 's ranging from .05 to .20), these associations were relatively weak and showed attenuation over time. Further, by the 3-year assessment, the PCL-YV showed no significant predictive utility on any index of offending (r 's ranging from .01 to .05), while scores on the YPI and NEO-PRI evinced continued predictive attenuation (r 's ranging from -.03 to .12). Another study by Stockdale and colleagues (2010) assessed 161 youth offenders (ages 12-18; $M = 16.2$, $SD = 1.4$) found that while the PCL-YV strongly predicted both violent (r 's ranging from .42-.45) and nonviolent (r 's ranging from .48-.49) recidivism during adolescence, at 7-year follow-up these scores predicted adult violent (r 's ranging from .18-.31) and nonviolent (r 's ranging from .14-.19) recidivism much more poorly. Finally, a study examining the predictive utility of the PCL-YV for recidivism of 75 male youth offenders (starting at ages 13-17; $M = 15.6$, $SD = 0.9$) over a 10-year follow-up showed no appreciable effects at either the total or factor level (Edens & Cahill, 2007). These findings counter the aforementioned research by suggesting that the high confidence held toward the long-term predictive utility of psychopathy measures may not extend as clearly as advertised.

Further, some researchers have expressed concerns that the predictive utility of some measures of psychopathy can be attributed to items gauging social deviance and criminal behavior subsumed within measure criteria (Corrado, Vincent, Hart, & Cohen, 2004; Edens, Poythress, Lilienfeld, Patrick, & Test, 2008; Kennealy, Skeem, Walters, & Camp, 2010; Skeem & Cooke, 2010). For instance, a meta-analysis of 32 effect sizes for the relative predictive power of the PCL-R factors indicated that Factor 2 (antisocial deviance) scores are more uniquely predictive of violence ($d = .40$) than Factor 1 (interpersonal/affective; $d = .11$) (Kennealy, et al., 2010). Nevertheless, positive associations between psychopathic traits and

offending behavior have also been observed using measures that omit such criteria. For instance, Poythress and colleagues (2006) administered both the ASPD (which includes features of antisocial behavior) and the YPI (which doesn't) to a sample of youths (ages 14-17; $M = 14.4$, $SD = 1.7$) in a juvenile diversion program ($n = 165$). A series of hierarchical regression analyses were then conducted to determine the incremental level of association between psychopathy scores on both of the measures (above and beyond a series of risk factors) and youth's past-year delinquent behavior. Results of their analyses revealed that total scores on both the ASPD ($R^2 = .031$) and YPI ($R^2 = .034$) were associated with higher levels of prior-year delinquency. The researchers also examined the correlations between APSD and YPI total scores on youths' age of delinquency onset and found that higher psychopathy scores both measures were significantly related to an earlier age of offending onset ($r = -.29$ and $r = -.28$, respectively).

Of course, the researchers also found that the highest correlations between YPI factor scores, past-year delinquency, and age of offending onset could be attributed to the impulsive/irresponsible components of psychopathy. The point here is that even when measures don't include direct references to past criminal behavior, they do assess social deviance and disinhibition, which tend to be stronger predictors of offending than the affective and interpersonal features of psychopathy (e.g. Corrado, et al., 2004; Edens, et al., 2008; Kennealy, et al., 2010). As such, the results suggest that the core features of psychopathy are related to youth engagement in delinquent behavior even without the inclusion of criminal behaviors among the criteria. Nevertheless, though these measures get closer to a pure assessment of psychopathy as personality, the elements of social deviance and impulsivity retained in those measures produce the lion's share of prediction.

Potential Uses of Psychopathy Measures in Light of Connection with Offending and Violence

As a result of the focus on research supporting the connection of psychopathy with antisocial behavior (with less emphasis on the contradictory research), there is considerable interest in measures of psychopathy as violence risk appraisal tools; so much so that psychopathy assessments are some of the most commonly used methods of risk assessment (particularly violence risk) in forensic and legal settings (Tolman & Mullendore, 2003). For members of the legal process (e.g. lawyers and judges), psychopathy measures are used to inform decisions regarding an individual's likelihood of offending again, the length of sentencing, and for youth, whether or not an individual should be tried in adult vs. juvenile court (e.g. Seagrave & Grisso, 2002; Viljoen, et al., 2010). As for staff within the institutional and incarceration context, their chief use is simple: to identify those most likely to be harmful to staff and other patients or inmates so that they can be more closely monitored (see Edens & Campbell, 2007).

However, not all uses of measures of psychopathy are meant to inform risk potential and the resultant punitive measures taken by the courts and prisons to discipline these individuals. Beyond assessment, understanding the link between psychopathy and crime may have implications for developing treatment to reduce future risk (Edens et al., 2001). To begin, though high scores on such measures are sometimes used to deny intervention efforts, given beliefs that these individuals may be resistant or unable to profit from treatment, recent research has shown this assumption to be misguided (Salekin, 2002). Second, as research and theory highlights heterogeneity within those who score highly on measures of psychopathy, there is the possibility that these distinct variants of the 'disorder' may show differences in the mechanisms that affect their risk potential.

Given that these subtypes differ in their etiology and the underlying mechanisms that produce their psychopathic characteristics (e.g. Blackburn, 1987; Karpman, 1948; 1955; Mealey, 1995; Porter, 1996; Skeem, et al., 2003), treatment efforts that are tailored to the specific deficits of each variant of psychopathy may maximize their success in reducing these youths' future potential for antisocial and violent behavior. Unfortunately, typical assessments of psychopathy in forensic and legal settings fail to account for this heterogeneity and intervention efforts (or lack thereof) for psychopathy are applied using a one-size-fits-all approach (Skeem, et al., 2003) without consideration of how these decisions may impact long-term behavioral outcomes across psychopathy variants. To highlight the error in failing to account for heterogeneity in practical settings, I will now move on to addressing the research that has directly investigated differences between psychopathy variants in their criminal and violent risk potential.

Secondary Psychopaths May be at Greater Risk for Violent and Other Criminal Behavior than Primary Psychopaths

As covered in detail in Study 1 above, research has indicated that heterogeneity in the construct of psychopathy exists and that primary and secondary variants of psychopathy can be identified both in adult and adolescent populations (e.g. Kimonis, et al., 2010; Newman & Schmitt, 1998; Skeem et al., 2007; Tatar et al., 2012; Vaughn et al., 2009). The most common distinction between the variants, proposed by Karpman (1948; 1995), frames neurosis or anxiety as the key marker for secondary psychopathy. There is some support for this notion, as anxiety has proven important for disaggregating those with high scores on measures of psychopathy (Kosson & Newman, 1995; Skeem et al., 2007). However, theoretical perspectives that aim to differentiate psychopathy subtypes also suggest individuals with secondary psychopathy are purported to be more prone to deficits in emotional and behavioral control than individuals with primary psychopathy (Blackburn, 1987; Karpman, 1955).

Though difficulties with impulsive behavior are considered to be a hallmark of psychopathy more generally (see Cleckley, 1941), it is believed that the underlying neurotic conflict attributed to secondary psychopathy serve to inflate impulsive deficits above that of the primary variant (Karpman, 1955). Because those with primary psychopathy are believed to be absent conscience and general emotional experience, these individuals would also be expected to be more purposeful in their actions, which are meant to maximize their gains or excitement for engaging in such behavior. In other words, individuals with primary psychopathy engage in antisocial behavior because they simply feel like it, or because doing so may bring stimulation to an otherwise emotionally-deficient existence. In contrast, “secondary psychopaths possess a conscience whose functioning is disrupted by the intrusion of strong, experience-based hostility” (Skeem, et al., 2003, p. 520). This hostility is believed to stem from early experiences of parental rejection, neglect, abuse and trauma (Karpman, 1955; Porter, 1996). As a result, rather than engaging in antisocial and violent behavior as a means to create stimulation (as is attributed to the primary variant), individuals with secondary psychopathy tend to be over-stimulated by the environment and instead ‘lash out’ in response to situations that exacerbate stress and anxiety.

Empirical Support for Psychopathy Subtypes and Theorized Deficits

Indeed, research involving cluster-analytic derivation of psychopathy subtypes offers empirical support for these distinctions (e.g. Hicks, Markon, Patrick, Krueger, & Newman, 2004). In their study, Hicks and colleagues used cluster analysis to differentiate psychopathy subtypes among 96 male offenders (ages 18-55; $M = 31.1$, $SD = 6.7$) using the PCL-R and other personality features using the Multidimensional Personality Questionnaire (MPQ-BF; Patrick, Curtin, & Tellegen, 2002). Their results yielded two clusters that mirrored primary (termed

emotionally-stable psychopaths) and secondary (termed aggressive psychopaths) variants. Consistent with the above theoretical distinctions, the personality profiles of ‘emotionally-stable’ (primary) psychopaths revealed low levels of stress reactivity and high levels of agency (e.g. feelings of personal control). In fact, the researchers indicated that “emotionally stable psychopaths tended to describe themselves as planful and less likely to act without forethought...but they also scored low on Harm Avoidance, reflecting tendencies toward sensation seeking and fearlessness” (Hicks, et al., 2004, p. 283). In contrast, offenders in the ‘aggressive’ (secondary) psychopath group reported high stress reactivity, low constraint (e.g. disinhibition and lack of control), and high alienation (e.g. view the world as populated by potential enemies). Further, as may be gleaned from the label, secondary psychopaths also reported an increased likelihood to respond to provocation with aggressive action. Such research suggests the theoretical distinctions between psychopathy subtypes generalize well to adult psychopathic offenders.

Other research has echoed these proposed theoretical distinctions between psychopathy subtypes among adolescents. For instance, Vaughn and colleagues (2009) used a cluster-analytic strategy to differentiate subtypes in a sample of 267 incarcerated youth (mean age = 15.4) using psychopathy scores on the ASPD and PPI and indicators of emotional distress using the Brief Symptom Inventory (BSI; Derogatis, 1993). The researchers then examined differences between the derived subtypes on features of psychopathology and behavioral characteristics. The results revealed that the secondary group showed higher levels of anxiety, depression, suicidal ideation, somatization, and obsessive-compulsive symptomatology than the primary group, which is consistent with Karpman’s (1955) connection between secondary psychopathy and difficulties in neuroticism and emotional dysregulation. More relevant to the present study, the results from

ANOVA also indicated that youth with secondary psychopathy showed higher levels of drug use in the past year and total self-reported delinquency and had more varied histories of violent and property offending than youth with primary psychopathy. These findings are consistent with the contention that youth with secondary psychopathy may be at increased risk for violence and antisocial behavior than youth with primary psychopathy.

Psychopathy Subtypes and Violence

Considering the proposition and empirical evidence that secondary psychopathy is associated with greater emotional instability and impulsivity than the primary variant (Blackburn, 1987; Hicks, et al., 2004; Mealey, 1995; Karpman, 1955) secondary psychopathy may also relate more strongly to violence and other crime than primary psychopathy (see Kimonis, et al., 2010; Skeem, et al., 2003). For instance, research has indicated that the angry/impulsive features of psychopathy (theorized to be more strongly related to secondary psychopaths) relate more strongly to violence and other criminal behavior than the bold/fearless features (theorized to be more strongly related to primary psychopaths). One study, examining the relation between psychopathy factors and adult offender ($n = 131$) engagement in institutional violence, revealed that the angry/impulsive features of the PPI showed a moderate (significant) relationship (r 's ranging from .34 to .36) with both aggressive and non-aggressive institutional misconduct, whereas the fearless dominance (bold/fearless) features did not (r 's ranging from -.03 to .03) (Edens et al., 2008). Similar observations have been found in meta-analyses of studies using the PCL-R as well, which indicate that the social deviance and impulsive characteristics (Factor 2) of this version of psychopathy relate more strongly to criminal behavior and violence than the affective/interpersonal features (Factor 1) (see Kennealy, et al., 2010; Walters, 2003). Other research has highlighted this association between

angry/impulsive features to relate strongly to violence risk in non-criminal psychiatric inpatients, an association not observed for boldness/fearlessness (Edens & McDermott, 2010).

Granted, extending these findings in particular to distinctions between psychopathy subtypes must be done with caution, particularly because the empirical literature has produced inconsistent findings when examining variant differences on the core angry/impulsive and boldness/fearless dimensions of psychopathy (Alterman, McDermott, Cacciola, Boardman, McKay, et al., 1998; Hicks, et al., 2004; Kimonis, et al., 2010; Poythress, Edens, Skeem, Lilienfeld, Douglas, et al., 2010; Skeem, et al., 2007; Swogger & Kosson, 2007; Tatar, et al., in press). Nevertheless, there is also evidence that the dominant distinguishing variable between psychopathy subtypes—specifically anxiety/neurosis (i.e. Karpman, 1955)—is related in hypothesized ways to the core features of psychopathy when examined independently of subtype classification. Research has found that low levels of anxiety are related to higher levels of callous-unemotional traits in youth (Pardini, Lochman, & Powell, 2007). Anxiety has also been found to show a negative association with PCL-R Factor 1 (boldness/fearless) traits and positive associations with that of Factor 2 (impulsivity) (Benning, Patrick, Blonigen, Hicks, & Iacono, 2005). Research has also indicated that anxiety and neuroticism (which has been more consistently connected with secondary psychopathy in the literature) in youth bear strong relationships to violence and general delinquent behavior (Heaven & Virgen, 2001; Skeem, Miller, Mulvey, Tiemann, & Monahan, 2005).

In summary, individuals with secondary psychopathy express difficulties with emotion regulation and anxiety whereas those with primary psychopathy are emotionally empty. Features of anxiety are positively related the angry/impulsive features of psychopathy and negatively related to boldness/fearlessness. Finally, both anxious symptomatology and the angry/impulsive

features of psychopathy are associated with greater rates of engagement in violent behavior while boldness and fearlessness is not. As follows, it appears reasonable that individuals with secondary psychopathy would be at higher risk for violence and general antisocial behavior than their primary counterparts.

Psychopathy Subtypes and Institutional Offending

As may be extrapolated from the research highlighted above, the differences between psychopathy subtypes in antisocial behavior may be particularly true in institutions, such that secondary psychopaths may be much more likely to engage in institutional infractions than primary psychopaths. Therefore, disaggregating psychopaths into variants may reveal differences because they represent different sets of deficits that may confer distinctive relations to institutional misbehavior. Theory suggests that individuals with secondary psychopathy are more prone to deficits in emotional and behavioral control (which may lead toward increased risk of violence and offending in an institutional context) than individuals with primary psychopathy, who show a relative lack of emotional experience and less difficulty with impulsivity (Blackburn, 1987; Karpman, 1955). In fact, the characteristics of secondary psychopathy overlap with the conceptualization of the “disturbed violent offender” (Toch & Adams, 1986; 1989), which may also help to highlight the potential mechanisms that produce their disproportionate risk for institutional misbehavior.

In their description of the disturbed violent offender, Toch and Adams (1989) indicate that such an individual—as a result of an underlying mental illness (consider the anxiety pathology attributed to secondary psychopathy)—has difficulty coping with the stress of prison life. “In settings that oscillate between chaos and routine (as most prisons do), stimulation levels [particularly for disturbed offenders] may defy accommodation or exceed thresholds” (Toch &

Adams, 1986, p. 16). In such settings, where coping abilities and psychological resources are overloaded (imagine the potential for overstimulation by secondary psychopathy), the disturbed offender often becomes disruptive and reacts violently towards staff and other inmates (Adams, 1992). As a consequence, these disturbed offenders tend to receive more infractions than others, and spend disproportionate amounts of time in segregation or maximum security settings such as intensive management or control units (Adams, 1986; Lovell & Jemelka, 1996; Zinger, Wichman, & Andrews, 2001). The problem with this type of punitive treatment is that these disturbed offenders tend to react negatively to these sanctions (think emotional reactivity of secondary psychopathy), thus perpetuating a cycle of continued engagement in violent and disruptive institutional behavior (Abramsky & Fellner, 2003). Further, these difficulties also translate to the stress of transitioning back to the community following incarceration. Toch and Adams (1989) conclude that rational management and treatment of these offenders while incarcerated, followed by community-based programs to ease the transition from incarceration are the best way to reduce future violence amongst this population. At face value, the associated features the disturbed violent offender appear to map well onto theorized conceptualizations of secondary psychopathy, and may have similar consequences for the behavior of youth expressing these features (e.g. Karpman, 1948; 1955).

Overall, the preceding research and theory serves to promote a possible connection between secondary psychopathy and risk for institutional offending. The limited amount of prospective longitudinal research that has delineated psychopathy subtypes amongst incarcerated youth to directly determine differences between the variants in institutional offending and violence has offered some support to this claim (e.g. Kimonis, et al., 2010). For instance, Kimonis and colleagues examined psychopathy subtype differences in institutional infractions

over a two-year study period. The researchers used cluster analysis to differentiate psychopathy subtypes using the PCL-R and symptoms of anxiety using the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1985), which yielded two clusters representing primary and secondary variants. Their results revealed that, controlling for length of stay at the institution over the study period, youth with secondary psychopathy engaged in higher levels of institutional infractions and violence than youth with primary psychopathy (Nagelkerke $R^2 = .14$). The researchers also found that secondary psychopaths were particularly high in their engagement in reactive aggression, more so than their primary counterparts ($\phi = .27$; the importance of this distinction will be explained in more detail below). However, their results also indicated that the stability of violent behavior within the institution was less stable over the course of the study than primary youths. In sum, while their prospective analyses were consistent with the claim that individuals with secondary psychopathy are at increased risk for offending and violence while incarcerated than primary psychopaths, this risk may wane over time.

Psychopathy Subtypes and Community Offending and Violence

In contrast to empirical study on the association between psychopathy and institutional offending, research has been much more definitive when examining the association between psychopathy and criminal/violent behavior within the community context, revealing that adolescents and adults scoring highly on such measures are at greater risk for such behaviors than individuals without psychopathic features (e.g. Blackburn & Coid, 1998; Forth, et al., 1990; Gretton et al., 2004; Hare & McPherson, 1984; Olver, et al., 2009). In addition, individuals scoring highly in measure of psychopathy are also more likely to be arrested and convicted for violent offenses than non-psychopathic individuals (Hare, 1983; Forth et al., 1990). However,

the literature examining differences in risk potential between psychopathy subtypes within the community context, particularly post-incarceration, is much more limited.

Nevertheless, following the above research and theory, it appears likely that secondary psychopaths would be at increased risk for violence and recidivism within the community than their primary counterparts. Beyond the hypothesized differences in emotional reactivity and impulsivity between the subtypes, secondary psychopaths may also be more sensitive to the negative effects of incarceration and the stress of transitioning back into the community following release from prison (e.g. Toch & Adams, 1989). For instance, if the connection between secondary psychopathy and “the disturbed violent offender” is to be believed, during their incarceration, these individuals may experience greater rates of staff punishment while incarcerated. This exposure to overly punitive responses to youth misbehavior may serve to exacerbate their levels of violence and offending both within an institution and post-incarceration. Indeed, punishment (or even the threat of punishment) as a means of deterrence has been shown to have the opposite impact, increasing rates of offending and aggression (Pogarsky & Piquero, 2003), particularly among adolescents high in trait neuroticism (Séguin, Arsenault, Boulerice, Harden, & Tremblay, 2002).

In addition, prisoner release back into the community following incarceration is particularly difficult, and the sharp change in context can be emotionally and psychologically damaging (Ditton, 1998). Offenders may also experience problems with their reintegration into the community from members of the general public. Youth offenders may experience resistance in their return to school (Matvya, Lever, & Boyle, 2006) and adults may have trouble finding and achieving gainful employment post-incarceration (Holzer, Raphael, & Stoll, 2003). This is important, as difficulties obtaining and maintaining gainful employment or education exacerbate

stress and are considered to be a significant predictor of general offender recidivism (Andrews, Bonta, & Wormith, 2006). As the underlying psychopathology associated with secondary psychopathy may lead these individuals to be particularly sensitive to the stress and overstimulation (Blackburn, 1987; Karpman, 1955) that comes in the transition back to the community (Toch & Adams, 1989), it also seems reasonable that these individuals would be at increased risk for parole failure and recidivism post-incarceration.

Unfortunately, there is a dearth of research that directly examines whether or not individuals with secondary psychopathy are at enhanced risk for criminal and violent behavior their release from incarceration, particularly when these offenders are identified in adolescence. Further, though there has been a limited amount of research examining differences in risk between adolescent psychopathy subtypes longitudinally (e.g. Kimonis, et al., 2010), studies have yet to examine if and how this risk changes in the transition to adulthood. As such, the present study will seek to address these gaps in the literature.

Secondary psychopathy may relate to very common forms of violence (reactive), whereas primary psychopathy also relates to less common forms (instrumental)

Another part of the reason secondary psychopaths could be at greater risk for crime and violence—both while incarcerated and following-release into the community—rests in the nature by which this behavior is produced. Violent behavior takes different forms, based on the stimuli that serve to produce aggression and the motives of the aggressor. Secondary psychopaths may simply show higher levels of risk due to the fact that they are more likely to commit a common form of violence (e.g. reactive). Research examining patterns of violence tends to differentiate between proactive (cool-tempered and planned; also termed instrumental aggression) and reactive (hot-tempered and immediate) aggression (e.g. Card & Little, 2006). “Proactive aggression...refers to deliberate acts that are directed toward obtaining desired goals...[whereas]

reactive aggression...refers to angry, often emotionally dysregulated, responses to perceived offenses or frustrations” (p. 467).

Of course, some have questioned the simple dichotomy between proactive and reactive aggression, by highlighting the fact that proactive and reactive aggression are highly correlated (r 's ranging from .76-.87; Dodge & Coie, 1987; Dodge, Coie, Pettit, & Price, 1990; Poulin & Boivin, 2000), and that this conceptualization may miss the mixed motives and the wide range of contributing factors for engaging in aggressive behavior (Anderson & Bushman, 2002; Bushman & Anderson, 2001). However, other research has indicated that the high intercorrelations in studies gauging proactive and reactive aggression are attributable to measurement techniques that assess both forms of aggression using overlapping forms of aggression (Little, Henrich, Jones, & Hawley, 2003). In this study, the researchers developed and tested a measure in a sample of 1,723 youth (ages 11-17) that subdivided aggression based on form (overt and relational) and function (proactive and reactive) that attenuated the intercorrelation between proactive and reactive aggression ($r = -.10$). The researchers concluded that this decomposition approach (or observational methods; see Card & Little, 2006) can produce mostly independent assessments of proactive and reactive aggression, and that future research in this domain should follow the same methodology in order to more closely tap the mixed motivations of both types of aggression. As follows, this more efficient measure of proactive and reactive aggression is used in the present study.

As theoretical perspectives on psychopathy subtypes imply that secondary psychopathy may be more “hot headed” and reactive than those with primary psychopathy (Karpman, 1955; Porter, 1996), it has also been hypothesized that individuals with secondary psychopathy may be more prone to reactive forms of aggression. In contrast, the “cool headed” and unemotional

demeanor of primary psychopathy would then be expected to show more of an association with proactive aggression (see Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003). A tendency toward reactive aggression is also considered to be a particular problem for individuals who tend to over-attribute hostile intentions to others, a cognitive appraisal style termed the hostile attribution bias (see Dodge & Coie, 1987). At present, there has been some research that has observed positive associations, between hostile attributional styles, psychopathic traits in general, and aggression (Frick, Cornell, Bodin, Dane, Barry, et al., 2003; Miller & Lynam, 2003; Seager, 2005; Serin, 1991; Serin & Kuriyachuk, 1994; Vitale, Newman, Serin, & Bolt, 2005). For instance, research has indicated that when presented with vignettes describing hypothetical frustrating situations, incarcerated male offenders high in psychopathic traits reported higher levels of anger and attributed a higher level of hostile intent to the people in the vignettes than offenders low in psychopathy (Serin, 1991; Vitale, et al., 2005). Further, studies have provided evidence that the more aggressive that children, youths, and adults become, the more likely they are to attribute hostile intent to others (Dodge, Price, Bachorowski, & Newman, 1990; Epps & Kendall, 1995; Orobio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2002).

However, though the association between secondary psychopathy and hostility is implied in theory, no studies have been conducted that have examined this association directly. Nevertheless, some research has indicated that a substantial portion of the variance in violent criminal behavior (31%) and psychopathic traits (48%) can be accounted for by the combination of impulsivity and a hostile worldview (Seager, 2005). In addition, as individuals with secondary psychopathy are theorized to express strong, experience based hostility (due to histories of abuse and neglect; Karpman, 1955) and have been empirically shown to view the

world as populated by potential enemies (see Hicks, et al., 2004), they would likely exhibit greater tendencies toward reactive aggression.

There is some (limited) empirical support for the proposition that secondary psychopaths are more prone to reactive aggression than primary psychopaths, as may be expected by theory (see Skeem et al. 2003). For instance, as described above, incarcerated adolescent offenders with secondary psychopathy have been shown to express a greater likelihood of reactive aggression than their primary counterparts (Kimonis et al. 2010). Subtype differences in the form of aggression have also been observed in a sub-clinical psychopathic sample ($n = 96$) of college students (ages 18-46; $M = 21.5$, $SD = 4.6$) (Falkenbach, Poythress, & Creevy, 2008). In their study, the expected associations between ‘psychopathy subtypes’ and forms of aggression were observed (Cramer’s $V = .30$). ‘Primary psychopaths’ were more likely to engage in proactive/mixed aggression (51.2%) compared to ‘secondary psychopaths’ (18.2%) and ‘secondary psychopaths’ showed a greater prevalence of hostile/reactive aggression (81.3%) than primary psychopaths (48.8%). However, given the limited amount of research on psychopathy subtype differences in their aggressive tendencies, further research is necessary to replicate these findings. The present study will also seek to address this aim.

The Present Study Addresses Psychopathy Subtype Differences in Antisocial Behavior and Aggression in the Short- and Long-Term

In this study, I investigate how characteristics used to discriminate psychopathy subtypes produce differences in the relative risk for and levels of youth engagement in violent and general offending, both while participants are incarcerated as adolescents and following their release back into the community. In addition, I will also be examining whether or not these differences in risk extend to long-term adult antisocial and aggressive behavior. To serve as a comparison, I will also examine how youth high and low in psychopathy differ in their relative risk for

offending and aggression while incarcerated in adolescence (short-term) and in adulthood (long-term). The basic goal is to obtain empirical support for the contention that the secondary variant of psychopathy will yield higher rates of aggression and delinquency while incarcerated, and antisocial behavior in adulthood than the primary variant. A secondary goal relates specifically to the nature of violent/aggressive behavior; the expectation is that the emotional reactivity attributed to secondary psychopathy (Karpman, 1948; 1955) would yield more engagement in aggression. For the field of psychopathy to advance understanding of the psychopathy construct, it is important for research to identify how the heterogeneous forms evince differences in their risk potential across different contexts (while incarcerated and in the community post-incarceration) and across the transition to adulthood. This is particularly important, given the considerable degree of psychopathic trait instability observed in Study 1.

The first aim of this study is to compare the likelihood and nature of short-term offending and aggression for youth high and low in psychopathy and between adolescent psychopathy subtypes. To accomplish this task, I will conduct a series of longitudinal analyses to address the level of and change over time in offending within the institution via offender self-reports (SRO across the first two months of incarceration). Analyses will also examine aggregate-level differences in institutional reports of general, serious, and violent offending, as well as self-reported aggressive tendencies. The second study aim is to compare the likelihood of long-term offending and aggression in adulthood for youth high and low in psychopathy and to examine how characteristics discriminating psychopathy subtypes may predict adult offending. To do this, I will conduct a series of analyses comparing these groups in their levels of self-reported offending and aggression in adulthood. The specific analyses conducted in this study are addressed in the methods section below.

Methods

Sample and Procedure

The population used for analysis in the second study was the same as that for the first study. As such, the sample characteristics and procedure of data collection was consistent across both studies. See the Sample and Procedure sub-sections the Study 1 Methods for more detail.

Attrition/Selection Bias Concerns

To address potential concerns regarding selection bias, a series of group comparisons using independent-samples *t*-tests on the demographic and key variables of interest were conducted between the “prison” ($N = 169$) and “community” ($N = 186$) samples, youth who were recruited for the study ($N = 94$) and those who were not ($N = 261$), and individuals who agreed ($N = 94$) or refused to participate ($N = 26$) in the study. Findings related to baseline age, race/ethnic group status, psychopathy and anxiety are reported in the methods section of Study 1 (pages 41-42). In addition, youth were compared on their baseline levels of self-reported offending, institutional reports of offending, and aggression.

Once again, the findings comparing youth in the prison and community samples serve to alleviate concerns regarding selection bias. Specifically, the analyses revealed no significant group differences in baseline self-reported offending ($t[353] = 0.362, p > .10$), institutional misconduct ($t[353] = 0.474, p > .10$), or self-reported overt ($t[353] = -0.410, p > .10$) and relational aggression ($t[353] = -0.095, p > .10$). A similar pattern was observed comparing those who completed the study and those who did not. Specifically, no group differences were observed in self-reported offending ($t[353] = 0.146, p > .10$), institutional misconduct ($t[353] = 0.449, p > .10$), overt aggression ($t[353] = 0.289, p > .10$), or relational aggression ($t[353] =$

0.507, $p > .10$). Finally, no differences were observed between youth who agreed to participate in the study and those who refused on any of the background variables of interest (all $ps > .10$).

Measures

Psychopathy. Psychopathic traits in adolescence and adulthood were assessed using the Youth Psychopathic Traits inventory (YPI; Andershed et al., 2010). A more detailed description of the YPI can be found in the Study 1 Methods section.

Anxiety. Symptoms of trait anxiety in adolescence were assessed using the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1979) and adult anxiety symptomatology were gauged using the Adult Manifest Anxiety Scale-Adult Version (AMAS-A; Reynolds et al., 2003). More complete descriptions of the RCMAS and the AMAS-A can be found in the Study 1 Methods section.

Self-Reported Offending. Self-reports of offending behavior were assessed in the original interview schedule using a modified version of the Self Report of Offending scale (SRO; Huizinga, Esbensen, & Weiher, 1991). The modified SRO features 9 items assessing involvement in antisocial and illegal activities (e.g. *Beaten up, mugged, or seriously threatened another person?*) as well as two additional items specifically geared towards institutional offending (e.g. *physically attacked another inmate?*). Responses to each of the items were recorded dichotomously as either having participated in the behavior (1; "Yes") or not (0; "No"). The SRO has been shown to have high internal consistency (alphas ranging from .70 to .88) and the scale conforms well to a single offending construct (CFI = .88; RMSEA= .04) (Huizinga et al., 1991). In addition, measurement in a large sample of juvenile offenders has shown that the SRO provides functional equivalence across multiple ethnic groups and across gender (Knight, Little, Losoya, & Mulvey, 2004). The SRO was assessed at baseline to assess each youth's level

of offense involvement prior to entering the facility and within the first 48 hours after arrival. Youth's self-reported offending was also re-assessed at each of the institutional follow up assessments (one week, two weeks, one month, and two months). A variety of offending score at each time point (and throughout the youth's stay at the facility) was computed by summing the number of times responses to each of the 9 questions were endorsed, with higher scores indicating a greater variety of delinquency. Offending variety scores are commonly used as an index of criminal activity (Hindelang, Hirschi, & Weis, 1981) and research has suggested that such variety scores can show some degree of validity (Huizinga & Elliott, 1986).

Youth self-reported offending in adulthood was also assessed using the modified SRO, but the two questions pertaining to institutional misconduct (e.g. *physically attacked other inmate* and *physically attacked staff*) were dropped at the follow-up assessment. This was because youth these questions would be inappropriate for youth that were interviewed within the community, so these items were dropped to maintain consistency between the community and incarcerated follow-up interviews. Responses to each of the items were again recorded dichotomously as either having participated in the behavior (1; "Yes") or not (0; "No"). A variety of offending score in adulthood was computed by summing the number of times responses to each of the 7 questions were endorsed, with higher scores indicating a greater variety of offending ($\alpha = .71$).

Aggressive Tendencies. Offender engagement in reactive/proactive and overt/covert aggression was assessed in the original interviews and during the follow-up using the Relational-Overt Aggression Scale (ROAS). The ROAS is a self-report measure, developed by Little and colleagues (2003) and normed on a sample of adolescents ($\alpha = .93$). The ROAS distinguishes among four principle dimensions of aggressive behavior: overt vs. relational aggression, and

instrumental vs. reactive aggression. The 4-item reactive overt (e.g., *If others have angered me, I often hit, kick or punch them*; original sample $\alpha = .76$; follow-up sample $\alpha = .79$), the 4-item instrumental overt (e.g., *I often start fights to get what I want*; original sample $\alpha = .86$; follow-up sample $\alpha = .82$), and the 10-item relational aggression (e.g., *I'm the kind of person who says mean things to others*; original sample $\alpha = .88$; follow-up sample $\alpha = .78$) subscales were assessed at the week 3 and follow-up assessments. Given a considerably high correlation between the instrumental and reactive overt scales ($r = .675$), the scores on these scales were combined to create a total overt aggression score. Little and colleagues' (2003) hypothesized model showed a good fit (evincing four discrete dimensions of aggression) $\chi^2 = (129, N = 1723) = 932.0$; RMSEA = .06; NNFI = .95; IFI = .96. Also, overt and relational aggression, although distinct constructs, are highly correlated (69% of the reliable variance was shared) (Little, Jones, Henrich, & Hawley, 2003). The scores from each of these subscales are summed, with higher scores indicating a greater tendency to engage in a particular form of aggression.

Official Records. Official institutional records of offending during adolescent incarceration were requested and obtained from the Division of Juvenile Justice (DJJ). These records documented each youth's officially documented misbehavior and offending during their first 13 weeks of incarceration at the institution (if the youth had stayed that long). From each of these incident reports, the date, type, and severity of offense was derived, as well as the punishment that was given as a result of the altercation. These incidents were summed across each youth's first 13 weeks of incarceration to derive a total frequency of general offending in the initial adjustment to incarceration. Similar sums were also conducted to gauge youths' specific engagement in serious and violent institutional offending. These frequency scores were

then adjusted to account for how many weeks for which the youth had complete institutional record data (to account for youth who left before the end of the 13 week period).

Analyses

Consistent with Study 1, high and low psychopathy groups in adolescence were identified the previously specified “diagnostic” cut-off on the YPI (see Cauffman et al., 2009). Primary and secondary variants of psychopathy were also constructed from median-split on total scores of the RCMAS from the initial interview schedule. To address the first study aims relating to testing of differences in the likelihood of criminal behavior and violence in the short-term (e.g. prior to juvenile incarceration and misconducts during their stay at the DJJ), several types of analyses were conducted. Group differences (e.g. high vs. low psychopathy; primary vs. secondary vs. control) in self-reports of offending (on the SRO) during the first two months of incarceration were conducted using negative binomial regression. Negative binomial regression analyses were chosen because the outcomes distributions (SRO and institutional reports of offending variety across first two months of incarceration) reflected overdispersed data (variability [variance] in the data is greater than the mean), a common occurrence in offending data (see O’Hara & Kotze, 2010). Differences between high/low psychopathy youth and psychopathy subtypes in self-reports of aggression were compared using independent-samples *t*-tests and ANOVA. I hypothesized that youth with secondary psychopathy would show higher levels of offending and aggression within the institution than primary and control youth. In addition, I expected that youth scoring high in psychopathy would report more institutional misconduct and aggression than youth scoring low in psychopathy.

A series of repeated-measures ANOVAs were also conducted to examine high vs. low psychopathy and subtype differences in the level and change in institutional records of offending

and violence over time. I hypothesized that youth with secondary psychopathy would show higher levels of self-reported offending across the first two months of incarceration and a greater rate of initial increase and later decline in offending behavior (consistent with Kimonis, et al., 2010) than youth with primary psychopathy.

To address the second study aim involving psychopathy group differences in long-term risk for antisocial behavior and aggression, several different analyses were conducted. Comparisons between youth high and low in psychopathy on self-reported offending and aggression in adulthood were conducted using independent-samples *t*-tests. This type of analyses was used for adult self-reported offending because an analysis of the SRO data indicated a relatively normal distribution of scores across the sample. . To address potential power concerns for the small size of the follow-up sample regarding psychopathy subtypes, continuous scores on the YPI and RCMAS (and their interaction) were used to predict adult offending and aggression levels. These analyses used a multiple linear regression technique. I hypothesized that youth high in psychopathy would report higher levels of offending and aggression in adulthood and would be at enhanced risk for antisocial personality disorder. I also expected that features associated with secondary psychopathy would produce enhanced risk for all of these antisocial behavior outcomes in adulthood.

To address the final study aim pertaining to the impact of change in psychopathy scores from adolescence to adulthood on long-term offending and aggression outcomes, a series of multiple linear regression models were conducted. To examine change in psychopathic traits over time, change scores (e.g. follow-up YPI total scores MINUS original sample YPI total scores) were used to predict self-reported offending and aggression outcomes (controlling for baseline levels of psychopathic traits). I expected that youth who decreased in their

psychopathic traits over time would report lower levels of aggression and offending. I expected the opposite pattern for youth who increased in their psychopathic traits over time.

Results

As a reminder, the purpose of the second study is to examine whether psychopathic traits measured during adolescence (youth originally recruited between the ages of 14 and 17) predict both short-term risk for offending and aggression (prior to and during incarceration) as well as the long-term risk for the same antisocial behaviors in adulthood (follow-up of the same individuals between the ages of 21 and 26 either in the community or in adult prison institutions). These analyses focus primarily on assessing differences in risk for offending and aggression between psychopathy subtypes. Due to sample size constraints, the study examines how psychopathic traits across the entire sample—combined with continuous variables used to discriminate psychopathy subtypes (e.g. anxiety)—affect short- and long-term antisocial behavior. The basic goal is to obtain empirical support for the contention that the secondary variant of psychopathy will yield higher rates of aggressive and delinquent behavior while incarcerated and would be more likely to be arrested after release from juvenile incarceration than the primary variant. To give a comprehensive assessment of offending and aggressive behaviors, several different outcome variables are examined: overall self reports of offending behavior in both adolescence and adulthood, self-reported institutional offending behavior, , and self-reported aggression.

It should be noted that an attempt was made to procure alternate forms of assessment beyond self-report for adult assessments of offending and arrest-related behavior. To accomplish this, formal requests were submitted to the California Department of Corrections and Rehabilitation (CDCR) for institutional reports of adult misconduct and to the Federal Bureau of

Investigation for adult arrest records. Unfortunately, though the formal request for institutional reports was granted by CDCR, department-wide changes to the electronic records system have delayed access to this information for an indefinite period. Additionally, though the formal request for FBI arrest records was received, the application materials are still being reviewed by their institutional review board. Collateral reports from parents or legal guardians of the original participants were also intended to be collected to gauge additional reports of offending and arrest. However, due to the small sample size, the fact that many participants only had Spanish-speaking parents (and many of the measures included in the present study do not have validated Spanish language assessments) or did not feel comfortable providing contact information for their parents or legal guardians, these collateral reports are not included in the present study.

As a reminder, the first study aim seeks to determine how adolescents high and low in psychopathy differ and how characteristics delineating psychopathy subtypes produce differences in the relative risk for offending and aggression prior to and during incarceration. To address this question, a series of independent-samples *t*-tests, repeated-measures ANOVAs, and negative binomial regression analyses were conducted. Analyses focused on psychopathic trait scores and psychopathy subtypes derived from adolescent assessments of psychopathy and anxiety. The key outcomes of offending and aggression were also addressed using adolescent reports prior to and during their incarceration. The second study aim examines the long-term predictive utility of adolescent psychopathic traits and psychopathy subtype classifications on adult offending and aggression. Analyses addressing this question included independent-samples *t*-tests and multiple linear regression. Again, these analyses used psychopathic traits and anxiety derived from adolescent assessments, but the outcomes of interest involved offending and aggression in adulthood. The final study aim examines how changes in psychopathic traits

from adolescence to adulthood predict adult antisocial behavior and aggression. To address this aim, multiple linear regression analyses were conducted. The core predictor of interest was a change score, subtracting adolescent psychopathy scores during adolescence from those assessed in adulthood, to gauge overall change over time (while controlling for baseline levels of psychopathy). As with the second study aim, the outcome variables of interest included self-reported offending and aggression.

Comparing Youth High/Low in Psychopathy and Psychopathy Subtypes in Their Relative Risk for Offending and Aggression in Adolescence

To begin, analyses were conducted to examine whether higher levels of psychopathic traits during adolescence were associated with greater amounts of offending prior to incarceration. Psychopathy subtype differences in offending prior to incarceration were also examined. An independent-samples *t*-test was conducted to determine whether youth who scored high (above the 121.5 cut-off) on the YPI also evinced higher levels of offending prior to juvenile incarceration (in the Division of Juvenile Justice [DJJ]). Results supported this claim, as youth scoring above the cut-off on the YPI exhibited higher levels of offending prior to incarceration in the DJJ than “non-psychopathic” youth ($t[351.4] = 5.047, p < .001$). A similar analysis using one-way ANOVA examined psychopathy subtype differences (and controls) in pre-incarceration offending. Results indeed revealed significant differences between the subtypes in levels of pre-incarceration offending (Welch $[2, 188.2] = 16.326, p < .001$). Post-hoc tests indicated that both primaries (Tukey $LSD = 3.107, p < .01$) and secondaries (Tukey $LSD = 5.041, p < .001$) reported more offending prior to incarceration than youth low in psychopathy. Interestingly, the results also revealed trend-level differences between primaries and secondaries (Tukey $LSD = 1.834, p = .062$), with the secondary group reporting marginally more lifetime offending.

The next step was to determine if higher levels of psychopathic traits conferred a greater risk for institutional misbehavior while incarcerated. To determine if differences in self-reported institutional offending were present between youth high and low on the YPI during adolescence, a repeated-measures ANOVA was conducted. The intent was to examine differences in level and change over time at the baseline, week 2, week 3, week 4/month 1, and month 2 assessments. The results from this analysis are represented graphically in Figure 7 below. The results indicate significant [cubic] changes over time in offending ($F[1, 184] = 26.556, p < .001$) but this change over time (interaction between psychopathy group and time) was not significantly different across the high and low psychopathy groups ($F[1, 184] = 2.677, p > .10$). Nevertheless, significant group differences in the levels of offending within the institution were observed ($F[1, 184] = 6.972, p < .01$), with those scoring higher on the YPI reporting greater amounts of overall institutional misbehavior. Though examination of the figure above appears to highlight where the two groups differed, a series of negative binomial regression analyses were conducted to determine if specific offending inflection points could be observed. Negative binomial regression analyses were chosen because distribution analyses indicated significant overdispersion (variance greater than the mean) in the institutional offending data. Results from these analyses indicated that youth high in psychopathy scored significantly higher in offending variety at the baseline ($IRR = 2.061, Z = 2.68, p < .01$), week 2 ($IRR = 1.676, Z = 2.10, p < .05$), week 3 ($IRR = 1.591, Z = 2.03, p < .05$), and month 2 ($IRR = 1.377, Z = 2.00, p < .05$) assessments.

Another repeated-measures ANOVA was completed to examine psychopathy subtype (and control) differences in level and change over time in self-reported institutional misconduct. The results from this analysis are presented in Figure 8 below. Significant (cubic) change in

self-reported institutional misconduct over time was observed ($F[1, 183] = 28.223, p < .001$), but a marginally significant subtype by time interaction (order 4) was also observed ($F[2, 183] = 2.883, p = .059$). As can be seen in the graph, there appears to be a general difference in reports of institutional offending over time for the secondary group when compared to that of the primary and control groups. Aggregate level analyses indicated no significant differences between primaries and secondaries (Tukey $LSD = 1.540, p > .10$), but significant differences between secondaries and controls (Tukey $LSD = 3.051, p < .01$) in their self-reported levels of institutional misconduct across the first two months of incarceration. A series of negative binomial regression analyses were also conducted to determine if the subtype groups differed at any individual assessment point in their variety of self-reported institutional offending. The results indicated that both the primary group ($IRR = 2.135, Z = 2.41, p < .05$) and secondary group ($IRR = 1.974, Z = 2.04, p < .05$) were significantly higher than controls at the baseline assessment and secondaries ($IRR = 1.751, Z = 1.84, p = .066$) were marginally higher than the low psychopathy group at the week 2 assessment. However, while there were no significant group differences observed at the week 4 assessment, the secondary group reported a significantly higher amount of institutional offending at the week 3 ($IRR = 2.165, Z = 3.15, p < .01$) and month 2 assessments ($IRR = 1.646, Z = 2.83, p < .01$) than both the primary and control group. The fact that youth with secondary psychopathy tended to have higher offending inflection points at several of the interviews indicate this group tends to engage in higher more delinquency while incarcerated than primary and control youth.

Another set of analyses examined whether differences in institutional reports of general, serious, and violent misconduct could be observed between youth high and low in psychopathy as well as between psychopathy subtypes. To examine group differences (e.g. high vs. low

psychopathy; primary vs. secondary vs. control) in aggregate counts of institutional misbehavior using official records, a series of negative binomial regression analyses were conducted. Negative binomial regressions were again chosen due to a count-based distribution in the records data as well as the presence of significant overdispersion (variance greater than the mean). Analyses were conducted controlling for the number of weeks for which youth had valid institutional record data (e.g. exposure). Results comparing youth high in low psychopathy revealed no significant group differences in general offending reports ($IRR = 1.184, Z = 1.45, p > .10$), but youth high in psychopathy had a higher incidence rate of serious ($IRR = 1.303, Z = 1.98, p < .05$) and marginally more violent ($IRR = 1.287, Z = 1.83, p = .067$) incident reports than “non-psychopathic” youth. Results from negative binomial regression analyses comparing psychopathy subtypes also revealed important group differences in institutional reports of offending. In terms of general levels of offending, secondary youth had a marginally higher incidence of general offending reports ($IRR = 1.241, Z = 1.81, p = .071$) than control youth, but no other group comparisons were significant (all $ps > .10$). As for institutional records of violent offending, the results revealed that secondary youth had a significantly higher rate of violence ($IRR = 1.404, Z = 2.28, p < .05$) than controls and a marginally greater rate than primaries ($IRR = 1.359, Z = 1.76, p = .079$). A final comparison of psychopathy subtypes on serious offending infractions indicated that secondary youth had a significantly greater rate of infractions than control youth ($IRR = 1.451, Z = 2.42, p < .05$), but no other group comparisons were significant (all $ps > .10$).

Taken together, these results suggest that individuals that score high in psychopathy are more likely than those who score low on these measures to engage in institutional misconduct, but it appears that a substantial portion of this effect may be driven by youth who exhibit a

secondary psychopathy profile. In other words, youth who exhibit secondary psychopathy appear to be at enhanced risk for institutional misconduct when compared to other incarcerated youth.

Finally, it was important to determine if youth with high levels of psychopathic traits also reported higher levels of instrumental overt, reactive overt, and relational aggression than those who reported low levels of psychopathy. To address this question, independent-samples *t*-tests were conducted comparing high- and low-scoring psychopathy groups. As might be expected, youth high in psychopathy also reported higher levels of overt ($t[293.1] = 7.622, p < .001$) and relational ($t[275.3] = 6.403, p < .001$) aggression in adolescence youth compared to youth low in psychopathy. As differences in the aggressive behavior between psychopathy subtypes were particularly important for the present study, a series of ANOVAs were also conducted to determine if these subtypes (and low-psychopathy controls) differed in their levels of overt and relational aggression. The results from these analyses revealed significant group differences in overt ($Welch[2, 147] = 29.605, p < .001$) and relational ($Welch[2, 142.4] = 23.452, p < .001$) aggression between psychopathy subtype groups. Post-hoc analyses revealed that the secondary psychopathy group reported higher levels of overt aggression than the primary (Tukey *LSD* = 2.260, $p < .05$) and control group (Tukey *LSD* = 7.550, $p < .001$). Youth with secondary psychopathy also expressed more relational aggression than primaries (Tukey *LSD* = 3.642, $p < .001$) and controls (Tukey *LSD* = 7.502, $p < .001$). The primary group also reported higher levels of overt (Tukey *LSD* = 5.220, $p < .001$) and relational (Tukey *LSD* = 3.513, $p = .001$) aggression than low-psychopathy youth, but less so than the secondary group.

Taken together, these results suggest that individuals that score highly in psychopathy are more likely than those who score low on these measures to engage in institutional misconduct

and aggression (both overt and relational), but it appears that a substantial portion of this effect appears to be driven by the behavior of youth with secondary psychopathy. In other words, youth with secondary psychopathy appear to be at enhanced risk for institutional misconduct and aggression when compared to other youth incarcerated during adolescence.

Examining the Long-Term Predictive Utility of Psychopathic Traits and Characteristics Underlying Psychopathy Subtypes on Adult Offending and Aggression

The results from the previous set of analyses suggested that adolescent assessments of psychopathic traits could yield fairly strong associations with offending prior to incarceration and predictive utility in risk for institutional misbehavior while incarcerated. In addition, these effects appeared to be particularly pronounced for the secondary subtype of psychopathy. However, the results from study one revealed significant instability in psychopathic traits from adolescence to adulthood, particularly for individuals that scored highly on the measure. Given this relative lack of stability over time, it was necessary to determine whether this would affect the predictive utility of psychopathic traits to predict longer-term antisocial and aggressive behavior. Further, it was important to examine whether or not any differences in this predictive utility could be observed between identified psychopathy subtypes. Given sample size constraints, continuous variables used to discriminate psychopathy subtypes (e.g. psychopathy, anxiety, and the interaction) were used in the analyses rather than categorical subtype groups.

To address these questions, the first step was to determine if psychopathic traits, gauged in adolescence (ages 14-17), predicted more distal outcomes, namely self-reported offending in adulthood (ages 21-26). First, an independent-samples *t*-test was conducted to determine whether adolescents who scored high in psychopathy reported a greater variety of offending as adults than youth who scored low in psychopathy. An independent-samples *t*-test was chosen because the distribution of self-reported offending did not have any significant problems

regarding skewness or over dispersion. The results revealed no significant differences between youth high and low in psychopathy with regard to their reported variety of offending as adults ($t[86] = 0.713, p > .10$). To determine if the impact of adolescent psychopathy on adult offending might be masked by artificially disaggregating youth scoring above and below the cut-off on the YPI, a multiple linear regression analysis was conducted (controlling for lifetime offending), using adolescent YPI scores to predict adult offending. As before, the results indicated no significant prediction of adult offending using adolescent scores on the YPI ($\beta = .048, t = 0.427, p > .10$).

Though these results suggested that youth levels of psychopathic traits may not reliably predict offending in adulthood, it is possible that deviations between youth with primary and secondary psychopathy may have masked the true predictive utility for adult offending. To address this question, a multiple linear regression was conducted using adolescent psychopathic traits, RCMAS scores, and their interaction to predict adult offending (controlling for prior levels of offending). The results revealed no significant impact of psychopathic traits ($\beta = .031, t = 0.273, p > .10$), anxiety ($\beta = -.090, t = -0.789, p > .10$), or the interaction between these variables ($\beta = -.091, t = -0.781, p > .10$) on offending.

Despite the lack of connection between adolescent psychopathy and adult offending, it remains an open question as to whether or not these traits would be better suited to predicting levels of overt and relational aggression. Results from independent-samples t -tests revealed no significant differences between high and low psychopathy youth in overt ($t[85] = 0.650, p > .10$) or relational ($t[85] = 0.738, p > .10$) aggression. Results from linear regression analyses (controlling for adolescent aggression mirrored these findings, indicating no significant impact of continuous levels of psychopathy on adult overt, ($\beta = -.030, t = -0.272, p > .10$) and relational (β

= -.068, $t = -0.602$, $p > .10$) aggression. Analyses were also conducted to determine if differences in aggression could be observed based on characteristics used to distinguish adolescent psychopathy subtypes. A series of multiple linear regression analyses examined the impact of psychopathic traits, anxiety, and the interaction between the two on adult levels of aggression. Results revealed no significant impact of psychopathic traits ($\beta = -.087$, $t = -0.664$, $p > .10$), anxiety ($\beta = .125$, $t = 1.124$, $p > .10$), or their interaction ($\beta = -.028$, $t = -0.242$, $p > .10$) on adult levels of overt aggression. Finally, psychopathic traits ($\beta = .009$, $t = 0.071$, $p > .10$) and the interaction between the YPI and RCMAS ($\beta = -.045$, $t = -0.378$, $p > .10$) did not reliably predict adult relational aggression. However, a marginally significant impact of youth anxiety ($\beta = .203$, $t = 1.760$, $p = .082$) was found. Specifically, the results indicated that higher levels of anxiety predicted slightly more relational aggression as these individuals made the transition to adulthood.

How Changes in Psychopathic Traits from Adolescence to Adulthood Predict Adult Antisocial Behavior and Aggression

The results from the previous set of analyses suggested adolescent expressions of psychopathy are relatively good at identifying individuals at risk for offending and aggressive behavior in the short term (the risk is particularly pronounced for youth who present with features of secondary psychopathy), youth psychopathic traits are quite poor at predicting offending and antisocial behavior in adulthood. Part of the reason why the predictive utility of youth psychopathic traits might be diminished at longer-term assessments may be due to the instability of these traits through the transition to adulthood (see Study 1). As such, it may be possible that adolescent expressions of psychopathy might be more predictive of adult offending outcomes for those whose traits are more stable or increase over time. The remaining analyses examined how changes in psychopathic traits from adolescence to adulthood (e.g. gauging

relative stability over time) compare to the previous analyses in predicting adult offending and antisocial behavior outcomes (controlling for baseline levels of psychopathy).

To begin, a multiple linear regression analysis was conducted to determine whether or not changes in psychopathic traits (adult YPI Total score MINUS adolescent YPI total score) predicted self-reported variety of offending (controlling for baseline levels of psychopathy and lifetime offending) in adulthood. Results from this analysis indicated that changes in psychopathic traits from adolescence to adulthood predicted adult levels of offending ($\beta = .210, t = 2.056, p < .05$). Specifically, the results revealed that the less that youth decreased over time in their psychopathic traits, the greater the offending in adulthood. Conversely, the more youth decreased over time in their psychopathic traits, the lower their levels of offending. Another pair of multiple linear regression analysis were completed to determine if changes in psychopathic traits predicted adult levels of overt and relational aggression (controlling for baseline psychopathic traits and adolescent levels of aggression). The results from this pair of analyses indicated that changes in psychopathic traits did not significantly predict adult relational aggression ($\beta = .129, t = 1.295, p > .10$), changes in psychopathic traits had a significant impact on overt aggression ($\beta = .233, t = 2.212, p < .05$). The less that youth changed (or the more they increased) in their psychopathic traits over time, the higher their levels of overt aggression were in adulthood.

All told, the results from this set of analyses suggests that adolescent levels of psychopathic traits are quite useful in predicting juvenile behavior in the short term, but do not predict longer-term antisocial outcomes nearly as well, particularly adult levels of antisocial behavior and offending. What's important is that changes in psychopathic traits over time from adolescence to adulthood are much at predicting more distal forms of antisocial behavior. In

other words, the more stable these traits are over time (or also if these traits increase from adolescence to adulthood), the better they are at predicting adult antisociality. This is an important consideration, given the findings from Study 1 highlighting poor stability in psychopathic traits in the transition to adulthood. The less stable these traits, the less they are able to predict adult behavior problems.

Discussion

The intention of the second study was to examine how well adolescent levels of psychopathic traits to predict both short- and long-term risk for delinquency and antisocial behavior. The present study placed a particular focus within the confines of adolescent incarceration (short-term) and as youth made the transition to the community or prison confinement in adulthood. The first, and most commonly studied research paradigm in literature (see Blackburn & Coid, 1998; Forth & Book, 2010; Gretton et al., 2004; Hare, 1983; Hare & McPherson, 1984; Forth et al., 1990; Kimonis, et al., 2010; Olver et al., 2009; Skeem et al., 2011), was to examine whether differences in relative risk for short- and long-term offending and aggression could be observed between adolescents in the “psychopathic” range and those with low levels of these traits. This study also sought to examine how aggression and offending during adolescence and adulthood would differ between psychopathy subtypes (see Karpman, 1948; 1955 for the rationale). Finally, given the general level of instability in psychopathic traits over time observed in Study 1, the final set of examinations tested whether or not these changes in psychopathy from adolescence to adulthood could account for adult variations in offending and aggression.

The results revealed three key findings that warrant further attention. First, adolescent psychopathic traits were able to predict risk for offending and aggression in the short-term (prior

to and following juvenile incarceration) for youth high in psychopathy. More importantly, the findings also indicated that a substantial portion of this increased risk was driven by the expressed profile of the secondary psychopathy group, given their greater levels of lifetime and institutional offending and aggression. Second, the results indicated that single-point assessments of adolescent psychopathic traits—and by extension, characteristics used to define adolescent psychopathy subtypes—do not show meaningful long-term (after the transition to adulthood) predictive utility for offending and aggression in adulthood. Finally, the findings revealed that changes in psychopathic traits are better suited than single-point estimates in predicting risk for offending behavior and aggression in adulthood. These results suggest that psychopathic trait instability has a clear impact for risk assessment practices. These key findings are addressed in more focused detail below.

Adolescents High in Psychopathy and Those Presenting With Secondary Psychopathy are at Enhanced Risk for Antisocial Behavior in the Short-Term

As mentioned previously, one of the central purposes for the extension of psychopathic traits into adolescence is to assist in identifying youth who are at a particular risk for delinquent and aggressive behavior (see Edens et al., 2001; Frick, 2002; Seagrave & Grisso, 2002). This rationale is clear, given that measures of psychopathy continue to be one of the most widely used risk assessment tools in forensic, legal, and correctional practice (Tolman & Mullendore, 2003). Though the intention of this practice is to identify risky youth in need of special, focused interventions to reduce further risk (see Frick, 2002; Salekin et al., 2008), in actual practice, psychopathy measures serve different purpose. For legal actors (e.g. prosecutors and judges), psychopathy measures are often used to inform decisions regarding an individual's likelihood of recidivism, the length of sentencing, and waiver from juvenile to criminal court, in the case of youth (see Seagrave & Grisso, 2002; Viljoen et al., 2010). Indeed, research examining the

perceptions of juvenile court judges revealed that when presented with hypothetical vignettes of justice-system-involved youth, these justices were more likely to perceive greater risk, less treatment amenability, and to recommend prison placement for adolescents with psychopathic traits (Jones & Cauffman, 2008). Additionally, institutional and correctional staff are likely to use psychopathic traits, not to necessarily identify those in need of treatment, but rather to indicate individuals most likely to be harmful to staff and other inmates/patients so that they can be more closely monitored (see Edens & Campbell, 2007).

Though obvious concerns about this practice have been raised (Edens et al., 2001; Hart, et al., 2002; Seagrave & Grisso, 2002), the bulk of the research literature (Blackburn & Coid, 1998; Dolan & Rennie, 2006; Edens & Campbell, 2007; Forth & Book, 2010; Gretton et al., 2004; Guy et al., 2005; Hare, 1983; Hare & McPherson, 1984; Hicks, et al., 2000; Forth et al., 1990; Kimonis, et al., 2010; Olver et al., 2009) and the findings from the present study tend to identify a strong connection between psychopathic traits and the expression of delinquency and aggression, at least in the short-term. Specifically, the findings from the present study indicated that youth who scored high in psychopathic traits (scoring above 121.5 on the YPI; see Cauffman et al., 2009) in adolescence not only engaged in greater amounts of offending prior to juvenile incarceration, but also engaged in more misconduct over the first two months within the institution than youth with low levels of these features. Youth high in psychopathy also self-reported a greater tendency toward overt and relational aggression than “non-psychopathic” youth. This increased risk for offending for “psychopathic” youth was observed both for self-reports as well as official records of serious and violent misconduct.

Importantly, this short-term association between psychopathic traits and antisocial behavior is also pronounced in prior research involving adolescents. For instance, a meta-

analysis by Edens and Campbell (2007) observed that higher levels of psychopathic traits (as gauged by the PCL-YV) translated to greater amounts of youth aggression, physical violence, and general misconduct among incarcerated youth. Though their findings observed that the connection between psychopathic traits and antisocial behavior was stronger for impulsive antisociality (which includes elements of delinquency in the criteria) than affective/interpersonal features, in each case the associations were positive, suggesting the relationship is not simply due to past behavior. Additionally, these results are not solely limited to adolescents in the institutional context. A meta-analysis conducted by Olver and colleagues (2009), that features of psychopathic traits—gauged by multiple psychopathy measures (e.g. the YLS/CMI, PCL-YV, and SAVRY)—were strongly associated with general/non-violent and violent recidivism among youth in the community.

However, theoretical perspectives suggest that youth with secondary psychopathy are likely to be at particularly enhanced risk for short-term delinquent and aggressive behavior for several possible reasons. To begin, the most commonly used theoretical perspective to distinguish psychopathy subtypes—proposed by Karpman (1948; 1955)—distinguishes individuals with secondary psychopathy as having difficulties with anxiety and neurotic conflict. This is important, because Karpman (1955) suggested that the underlying neurosis of secondary psychopathy also serve to inflate impulsive deficits above that of the primary variant. The idea is that individuals with primary psychopathy tend to be devoid of conscience and general emotional experiences and are more purposeful in their actions. On the other hand, given the emotional reactivity expressed by individuals with secondary psychopathy, environmental stressors may overstimulate their capacity to inhibit their behavior, resulting in reactive ‘lashing out’ towards others. This perspective also coincides with Toch and Adams’s (1989) perspective

toward the disturbed violent offender, wherein an underlying mental illness (in this case, anxiety) increases the difficulty of coping with the stress of prison life (an environment oscillating between chaos and routine), which overloads his psychological resources. As a result, this type of offender often becomes disruptive and reacts violently towards staff and other inmates.

The findings from the present study tend to support these claims. This conclusion was derived because when re-analyzing group differences in lifetime and institutional offending and using psychopathy subtypes, youth in the secondary group generally reported the highest levels of offending. In fact, levels of offending among the secondary group were higher not only when compared to youth low in psychopathy, but also when compared to youth with similar trait levels (e.g. primary psychopathy). In addition, the greater likelihood of offending for youth with secondary psychopathy was further supported by group differences in official reports of offending, wherein secondary youth were charged with more serious and violent incidents than primary and control youth.

Another, somewhat similar reason for the enhanced risk for offending and aggression for youth with secondary psychopathy stems from theoretical perspectives regarding the etiological differences between psychopathy subtypes. Perspectives offered by Karpman (1948; 1955), Mealey (1995), and Porter (1996) all indicate that whereas primary versions of psychopathic traits tend to result from inborn deficits, individuals with secondary psychopathy tend to derive their characteristics from overly negative experiences from their environment. To Mealey (1995), the lack of prosocial peers and opportunities for success in an individual's formative residential environment produces a general distrust in others and a learned willingness to engage in antisocial activities to achieve their goals due to a lack of other options. In comparison, Karpman (1948) and Porter (1996) pointed to abuse and neglect from an

individual's parents and exposure to traumatic experiences, respectively, as the foundational component to the development of secondary psychopathy. These perspectives suggest that the harmful environments experienced by individuals with secondary psychopathy produces a "strong, experience-based hostility" (Skeem et al., 2003, p. 520) which increases their likelihood of perceiving the actions of others (whether threatening or not) as antagonistic. This hostile attribution bias (see Crick & Dodge, 1996) would, as a result, produce an aggressive or hostile response from youth with secondary psychopathy. Indeed, research and theory suggests that individuals exposed to abusive and traumatic environments tend to see the world in a more antagonistic and threatening light (Dodge, 2006) and are at increased risk for aggressive and violent behavior (Dodge, Bates, & Pettit, 1990; Dodge, 1993; Miller-Johnson, Coie, Maumary-Gremaud, Lochman, & Terry, 1999). The present study findings also conformed well to these perspectives. Specifically, youth with secondary psychopathy were at enhanced risk for aggression during adolescence, particularly in terms of reactive overt aggression. Secondary youth were also more likely to have been charged with violent institutional infractions than other youth. Thus, it would appear that the underlying hostile world perspective of secondary psychopathy makes these individuals more prone to aggress towards others when presented in interpersonal conflict.

Taken together, these findings from the present study suggest that psychopathic traits do have some ability to identify youth who are at risk for antisocial behavior in the relatively short-term. Further, youth with secondary psychopathy may be particularly prone to delinquent behavior, given their formative experience and underlying neurotic conflict, producing a greater tendency toward impulsive and aggressive outbursts. Though instead of using these findings as a rationale for the use of psychopathic traits to inform the practice of enhanced punishment and to

deny treatment due to therapeutic pessimism, researchers on both sides of the downward extension debate urge caution with this practice. The next section will discuss the theoretical differences between researchers on both sides of the debate and what this means for the prediction of long-term risk for offending. The next section will also address how the prediction of offending and aggression in the long-term was borne out in the present study and what explanations can be offered for why psychopathic traits assessed in adolescence may be limited in predicting adult risk.

Youth Psychopathic Traits and Psychopathy Subtype Characteristics Perform Quite Poorly in Predicting Adult forms of Aggression and Offending

As mentioned previously, one of the underlying assumptions behind the practice of extending the construct of psychopathy from adults to adolescents is that these features can be used to identify youth likely to continue antisocial behavior if left unchecked. However, some researchers in the psychopathy field suggest that using these measures for risk assessment purposes is misguided as many of these problematic features would resolve themselves due to normative maturation (see Edens et al., 2001; Hart et al., 2002; Seagrave & Grisso, 2002). They point to the developmental principle of multifinality, which suggests that what manifests in adolescence may lead to a multitude of outcomes in adulthood. In other words, the fact that adolescent psychopathic traits were observed to associate with delinquent and aggressive behavior in adolescence does not mean that these same features would predict behavioral problems in adulthood. These researchers would argue that any observed lack of connection between adolescent psychopathy and adult offending would support this contention.

In general, the results from the present study tended to support the perspectives that suggest poor long-term (offending and aggression in adulthood) predictive utility of adolescent psychopathic traits on adult behavior. In particular, the findings from the present study revealed

little variation between youth high in psychopathy and “non-psychopathic” youth in their levels of adult self-reported offending, aggression, and the likelihood of ASPD diagnosis. Analyses examining psychopathic traits on a spectrum (e.g. continuous psychopathic trait scores) also failed to observe a meaningful association. Results pertaining to how characteristics used to define psychopathy subtypes influenced risk for offending and aggression also followed a similar pattern. Specifically, the interaction between adolescent psychopathic traits and anxiety failed to predict self-reported delinquent and aggressive behavior.

Other lines of research have also failed to replicate the predictive utility of psychopathic traits across long periods of time (Cauffman et al., 2009; Edens & Cahill, 2007; Leistico et al., 2008; Olver et al., 2009; Stockdale et al., 2010). For example, a study by Cauffman and colleagues (2009) examining the predictive utility across a community-sample of offenders at multiple time points (6 months, 12 months, and 3 years) indicated that the associations between psychopathy and antisocial behavior diminished at later time points and showed no reliable prediction of self-reported delinquency by adolescent psychopathic traits by the third-year of assessment. Additionally, research involving longer-term follow-ups at seven (Stockdale et al., 2010) and ten years between assessments (Edens & Cahill, 2007), observed little to no connection between adolescent psychopathic traits and adult violent and general recidivism.

On the other hand, for those who support the belief that psychopathic traits exist and can be translated to adolescents, the true purpose of assessing psychopathy in adolescence should be to identify youth in need of tailored interventions geared towards reducing their continued engagement in delinquency (see Frick, 2002; Lynam, 2002; Salekin et al., 2008). In other words, their belief in the potential instability of psychopathic traits over time is actually an indicator of the capacity for change that can be accelerated through directed intervention (Frick, 2002).

Further, they would argue that a lack of attention to youth with psychopathic traits would likely lead to continued behavioral problems. The application of tailored treatment efforts to reduce future risk is especially relevant for youth with secondary psychopathy, as evidence-based intervention efforts geared toward the reduction of anxious symptomatology may serve to reduce the likelihood of hostile and aggressive adult behavior (see Karpman, 1955; Skeem et al., 2003). To the extent that the findings from the present study highlight a fairly strong connection between psychopathic traits and antisocial behavior in adolescence tend to support the risk argument.

There are several potential reasons why the impact of psychopathic traits on antisocial behavior was diminished almost entirely in the long-term. To begin, some may argue that the overrepresentation of incarcerated participants at the follow-up assessment may have accounted for the lack of differences between youth high and low in psychopathy (and between psychopathy subtypes). In other words, given that the follow-up sample consisted mostly of incarcerated individuals, one would not expect to find much variability in antisocial behavior among a group of participants with continued involvement within the justice system in adulthood. Though this is certainly a possibility, there are a couple of problems with this perspective. To begin, the original study sample was recruited while the youth were incarcerated at a juvenile justice facility, which would mean that if a lack of variability in the behavior of a confined sample were the case, psychopathic traits would not have been associated with delinquency and aggression during the adolescent period either. In addition, descriptive analyses of adult reports of offending behavior indicated that the level and variation in adult reports of delinquency ($M = 2.21, SD = 1.82$) was actually greater than that of adolescent reports ($M = 1.55, SD = 1.55$). Further, analyses presented in Study 1 examining the potential for selection

bias between prison and community samples for the follow-up revealed no significant group differences in baseline levels on the key study predictors (e.g. psychopathy and anxiety) and outcomes (e.g. self-reported offending, aggression, and institutional behavior). As such, concerns regarding selection bias may be reduced.

Another potential concern was that the analyses presented in the results only examined total levels of psychopathic traits, rather than differentiating factor scores, which may have masked the contribution of distinct psychopathic trait clusters. Research tends to observe a stronger association between impulsive and antisocial features of psychopathy and offending behavior than affective and interpersonal traits (Corrado et al., 2004; Edens et al., 2008; Kennealy et al., 2010). Thus, the inclusion of traits with a lesser impact on delinquent behavior may have reduced the overall predictive utility. However, supplemental analyses examining the impact of YPI Affective ($\beta = .002, t = .045, p > .10$), Interpersonal ($\beta = -.045, t = -.855, p > .10$), and Lifestyle Impulsivity ($\beta = .064, t = 1.197, p > .10$) revealed no significant prediction of adult offending patterns. Finally, given the relatively small sample of participants who completed the follow-up interview, there may have been insufficient power to detect small, but meaningful effects. Power analyses indicated that the size of the follow-up sample was large enough to at least detect moderate-to-large effects (see Table 1). Though these analyses may have been underpowered to detect small effect sizes, it remains questionable as to how meaningful these effects would be, given the prevailing belief that psychopathic traits are meant to identify individuals at particular risk for long term behavioral problems. Further, such small effects would not support the practice of using adolescent measures of psychopathy to inform legal decision-making such as harsher sentencing and waiver to criminal court (see Seagrave & Grisso, 2002).

Instead, the more likely explanation as to why adolescent psychopathic traits and characteristics underlying psychopathy subtype discriminations did not reliably predict adult engagement in offending and aggression is because of the findings from Study 1 revealing considerable instability in these traits over time. Indeed, it is a well-known statistical fact that a measure can only meaningfully predict an outcome if it can be assessed reliably (see Meehl, 1954). Though this is true of any measure used to define a particular construct, research in the realm of violence risk assessment is no different, since a lack of reliable measurement is a central feature of poor predictive utility (see Campbell, French, & Gendreau, 2007; Singh, Serper, Reinharth & Fazel, 2011). Additionally, the lack of reliability of a measure assessed at multiple time points need not simply be due to methodological difficulties, but can also be an indicator of actual change over time in the construct being assessed. It is the potential for developmental change in psychopathic traits from adolescence to adulthood that are central to the arguments against the downward extension of psychopathy (see Edens et al., 2001; Hart et al., 2002; Seagrave & Grisso, 2002). Coming back to the issue of multifinality expressed by these researchers, the combination of instability in psychopathic traits over time and poor long-term predictive utility tends to diminish confidence in the assumption that adolescents high in psychopathic traits are generally locked into life-long behavioral problems without directed intervention (see Frick, 2002; Lynam, 2002; Salekin et al., 2008).

Of course, this last statement is not meant to discount the importance of treatment efforts designed to help individuals reduce potential for engagement in further antisocial behavior, as certain youth may present with more intransitive forms of psychopathic traits that could result in continued problem behavior. Indeed, the results from Study 1 indicated that a substantial portion of the study sample showed little to no change in their psychopathic traits from adolescence

(ages 14 to 17) to adulthood (ages 21 to 26). And given that personality features are more changeable earlier in development, youth who do not improve in these traits as the result of normative maturity processes may still benefit from these efforts. The issue is that the presence of instability in general may reduce predictive utility when considering the entirety of youth with psychopathic traits. However, as will be discussed in the next section, specific attention to psychopathic trait change over time might help to improve assessment strategies designed to gauge long-term risk for antisocial behavior.

Changes in Psychopathic Traits over Time Reflect Variations in Antisocial Behavior Risk in Adulthood

The previous findings would seem to suggest that current practices in applying single-point psychopathy assessments to adolescent offenders to inform long-term risk may be misguided. This is particularly important given the fact that scores derived from such assessments are commonly used to provide information regarding future dangerousness and to legal authorities that may influence decision-making on harsher sentencing and criminal waiver practices (see Seagrave & Grisso, 2002; Viljoen et al., 2010), despite evidence to the contrary (Cauffman et al., 2009; Edens & Cahill, 2007; Leistico et al., 2008; Olver et al., 2009; Stockdale et al., 2010). As such, it appeared that the next logical step would be to directly examine whether change in psychopathic traits over time would better address risk assessment concerns for long-term behavioral problems. The rationale behind this is that the overall declines in psychopathic traits observed in Study 1 might produce parallel reductions in youth risk for continued antisocial behavior and aggression. Indeed, theoretical perspectives regarding the potential for psychopathic trait change from adolescence to adulthood, either from normative improvements in psychosocial maturity (see Cleckley, 1941; Edens & Vincent, 2008; Hart et al., 2002; Seagrave & Grisso, 2002; Skeem & Cauffman, 2003) or as the result of intervention

efforts designed to reduce the antisocial thinking patterns of youth with psychopathic traits (see Frick, 2002; Salekin, et al., 2008), suggest that such a change would result in marked variations in adult risk potential. These contentions focus on the developmental principle of multifinality, wherein the expression of psychopathic traits and the associated behavioral problems may yield completely different outcomes as youth reach adulthood. Even the original conceptualization by Cleckley (1976) suggested that the application of psychopathic features to youthful populations would likely fail to offer a confident assessment of their risk potential in adulthood: “the child or adolescent will for a while behave in such a way that would seem scarcely possible to anyone but the true psychopath and later change, becoming a normal and useful member of society” (p. 270). The underlying idea between each of these perspectives is that long-term risk for antisocial behavior may be directly tied to changes in psychopathic traits over time.

Indeed, the results from the present study revealed that adult engagement in offending and aggressive behavior were directly related to changes in psychopathic traits from adolescence to adulthood. These findings indicated that for youth who showed little to no change or increases in their psychopathic traits over time reported higher levels of offending and overt aggression in adulthood. By the same token, the results also suggested that youth who showed declines in their psychopathic traits from adolescence to adulthood reported much lower risk for adult offending and aggression. Importantly, the results also indicated that these effects were observed when controlling for baseline levels of psychopathic traits, suggesting that changes in psychopathic reflect variations in risk potential regardless of how “psychopathic” a youth was in adolescence..

The findings from research in other domains, particularly from normative personality and personality disorder pathology also support the connection between trait change and variations in

the long-term outcome of interest. For example, findings from the normative personality literature have indicated that changes in the Big Five trait clusters translate to variations in mental and physical health outcomes (Magee, Heaven, & Miller, 2013). In particular, the researchers observed that increases in conscientiousness (negatively associated with psychopathic traits; Hart & Hare, 1994; Lynam et al., 2005; Miller et al., 2001) and extraversion across a four-year period resulted in marked improvements in physical and mental health symptomatology. The researchers also observed that increases in neuroticism (connected to secondary psychopathy; see Karpman, 1948; 1955) across the same period produced poorer mental and physical health. As for findings from the personality disorder literature, Clark (2005) observed that reductions in personality disorder pathology over time (e.g. borderline and antisocial personality disorder) translated to improvements in depressive, anxiety, and disruptive behavior disorder symptomatology. Even research within the realm of psychopathic trait change in adolescence appears to fit this argument. Specifically, research examining the impact of a treatment program designed to target the antisocial thinking patterns in adolescents with psychopathic traits observed marked declines in these traits over time (Caldwell, McCormick, Wolfe, & Umstead, 2012). Importantly, the researchers also found a strong connection between these declines in psychopathic traits in response to intervention produced parallel decrements in the youths' institutional misconduct and amenability to further treatment.

Taken together, the findings from this study and other research indicate that changes in psychopathic traits over time are a better predictor of long-term antisocial behavior in adulthood than single-point assessments of psychopathy in adolescence. In fact, the results from single-point estimates of psychopathic traits appeared to have little, if any, relation to adult levels of offending and aggression. Differences in risk for offending and aggression are precisely

connected to the direction of this change over time as well. Youth who increase or show little change in psychopathy from adolescence to adulthood are at enhanced risk for long-term behavioral problems, whereas those who decline over time are less likely to engage in adult antisocial behavior. Most importantly, the extent of a youth's risk for long-term behavioral outcomes is directly proportional to *how much* change in psychopathic traits that occurred over time. The more youth decreased in psychopathy from adolescence to adulthood, the less likely they were to engage in these negative behaviors during adulthood. The opposite pattern is also true for youth who increased in their psychopathic traits over time. However, given that a very small proportion of youth evinced increases in psychopathic traits over time (12.5% of youth), it would appear that psychopathic traits are generally a poor predictor of antisocial behavior in general.

The findings from this line of analysis appear to have very clear implications for the assessment of psychopathy amongst the adolescent population. Currently, the practice of using measures of psychopathy as a risk assessment tool (Tolman & Mullendore, 2003) or to inform legal decision-making about enhanced sentencing and waiver to criminal court (Seagrave & Grisso, 2002; Viljoen et al., 2010), serve only to solidify the pejorative nature of the psychopathy label both in adolescence and adulthood. Further, these decisions have fairly extreme long-term consequences for youth who are exposed to the justice system, but appear to be based on assumptions regarding the capacity for adolescent psychopathic traits to predict long-term risk for continued behavioral problems. However, the findings from this and other research studies (Cauffman et al., 2009; Edens & Cahill, 2007; Leistico et al., 2008; Olver et al., 2009; Stockdale et al., 2010) indicate that single-point estimates of psychopathy during adolescence actually perform quite poorly as indicators of future risk. Therefore, when psychopathic traits are applied

to adolescents for the purposes of risk assessment, forensic and legal system practices should conduct multiple assessments of psychopathy to have a better indicator of changes in these traits over time. In addition, given the emphasis on criminogenic risk factors such as antisocial personality and antisocial thinking patterns as intervention targets in evidence-based correctional rehabilitation practices (see Andrews & Bonta, 2003), multiple assessments of psychopathy can also be used to highlight youth gains through tailored intervention efforts.

Limitations

Though the results from the present study offer important considerations for the application of psychopathic traits as part of a risk assessment strategy, there are several limitations that also must be addressed before reaching a final conclusion. Perhaps the most significant drawback from the present study is that the study focuses entirely on an incarcerated sample of adolescent offenders during the original assessment period and the follow-up sample consisted predominantly of adults that were incarcerated at the time of interview. This sampling reality poses several significant problems to the generalizability of the present study findings. To begin, the pure focus on adolescent male offenders at the outset of the study indicates that these findings may not as readily apply to female offender and non-incarcerated samples of adolescents. However, research into psychopathic traits has mostly been conducted with and validated for male samples (see Skeem et al., 2011) and findings have generally observed problems in the expression of psychopathic traits among females (see Cale and Lilienfeld, 2002). The fact that the study sample included a small minority of individuals (~11%) who were successful in reintegrating back into the community and avoiding return to custody did not allow enough power to draw comparisons between incarcerated and community-based participants. This would suggest that the present study findings may only generalize to incarcerated youth

who continue their problem behavior with enough severity to warrant their re-incarceration in early adulthood. However, a lack of observed differences between “potential” prison and community-based youth in baseline levels of key study variables produce slightly more confidence in generalizability arguments. In addition, offenders who maintain justice system contact across time also represent the most important group for identification in forensic assessment practices, so the present study did focus in on the most important group for which these assessments are designed. Despite this, future research should also consider including follow-up samples with a wider variety of adult outcomes (e.g. prison inmates and former offenders within the community) to examine whether or not the connection between single-point assessments, indices of change in psychopathic traits, and adult antisocial behavior generalizes more completely.

Another potential limitation of the present study was that the majority of antisocial behavior assessments used in the present study relied on self-reports, particularly with regard to arrests following juvenile incarceration and adult-based behavioral outcomes. Though institutional records of misconduct within the incarceration context were also used to assess engagement in delinquent behavior during adolescence, the lack of variability across individual time points precluded longitudinal assessments of risk for institutional misconduct. Therefore, aggregate counts of general and violent infractions across the first two months of incarceration could only be used in the present analyses. Though attempts were made to obtain FBI arrest records and CDCR records of institutional offending during adult incarceration, this data is currently unavailable in the present study. However, supplemental analyses indicated that self-reported offending was significantly associated with levels of general ($r = .389, p < .001$) and violent ($r = .423, p < .001$) institutional misconduct reports, suggesting they could serve as a

meaningful proxy for offending behavior during adolescence. Nevertheless, future research examining the long-term risk of formerly incarcerated adolescent offenders as the result of psychopathic traits should include collateral reports of problematic behavior problems.

The small sample size of individuals who completed both the adolescent assessments while incarcerated and the follow-up interviews in early adulthood may have also limited the statistical power necessary to observe small, but meaningful effect sizes detailing the connection between adolescent psychopathic traits and adult offending outcomes. Future research, including the present study sample, should include larger samples of adults at the follow-up period to determine whether the predictive utility of adolescent forms of psychopathic traits may have some degree of predictive utility for adult antisocial behavior. The final study limitations focus on the time-lag between the adolescent and adult assessments of psychopathy and offending and the fact that psychopathic traits were only gauged twice throughout the study period. As such, indices in change in psychopathic traits could only be conducted using change scores that may fail to account for longitudinal variation in the change in psychopathy over time. Future research should consider more than two assessments of psychopathic traits between adolescence and adulthood to gather a more detailed picture of youth change in psychopathy.

Conclusions and Implications

As a whole, the findings from the present study offer some important considerations for the utility of psychopathic traits gauged during adolescence to predict short- (prior to and during incarceration) and long-term (after the transition to adulthood) behavioral outcomes. Further, these findings indicate that the potential for change in these traits over time holds important implications for the practices of applying the psychopathy construct among children and adolescent for risk assessment purposes. To begin, the present study results conform well with

prior research documenting the connection between single-point assessments of psychopathy in adolescence and adulthood and short-term risk for antisocial behavior and aggression (Blackburn & Coid, 1998; Dolan & Rennie, 2006; Edens & Campbell, 2007; Forth & Book, 2010; Gretton et al., 2004; Guy et al., 2005; Hare, 1983; Hare & McPherson, 1984; Hicks, et al., 2000; Forth et al., 1990; Kimonis, et al., 2010; Olver et al., 2009; Skeem & Cauffman, 2003). Short-term risk was especially high for youth displaying features of secondary psychopathy, which makes sense given research and theory suggesting that the underlying neuroses of the secondary variant make them particularly prone to experience-based hostile attributions and reactive aggression and violence (see Karpman, 1948; Porter, 1996; Skeem et al., 2003; 2011; Toch & Adams, 1989). The problem when considering traditional uses of the assessment of psychopathic traits in forensic and legal system practice (see Seagrave & Grisso, 2002; Tolman & Mullendore, 2003; Viljoen et al., 2010), is that decisions regarding denial of treatment, harsher sentencing, and waiver from juvenile to criminal court have long-term implications for youths who come into contact with the justice system (see Seagrave & Grisso, 2002). The underlying assumption is that single-point assessments of psychopathy during childhood and adolescence can be used to identify youth who are at particular risk for life-course persistent offending patterns (see Moffitt, 1993; 2003).

However, these practices fail to account for the potential of change in psychopathic traits over time, which is concerning, given evidence within the realm of personality research that indicates considerable instability in normative personality features from childhood to adolescence (Roberts & DelVecchio, 2000) and from adolescence to adulthood (Roberts et al., 2001; 2006; Robins et al., 2001). Indeed, periods of developmental transition appear to represent critical points wherein change in temperament and personality features are most likely (see

Steinberg, 2006; Toth & Cicchetti, 1999). Additionally, theoretical concerns focusing specifically on the downward extension of psychopathic traits from adulthood to earlier periods of development, have suggested that psychopathic traits are likely to change as the result of maturity (Cleckley, 1941; Edens & Vincent, 2008; Hart et al., 2002; Seagrave & Grisso, 2002; Skeem & Cauffman, 2003) and response to treatment (Caldwell et al., 2012; Frick, 2002; Salekin et al., 2008). Therefore, it seems as no surprise that the results from Study 1 revealed considerable instability in psychopathic traits over time (especially for youth high in psychopathy) and the present study results indicated that single-point adolescent assessments of psychopathy yielded poor predictive utility for adult expressions of offending and aggression.

Given that these single-point assessments of psychopathic traits in adolescence can serve to inform short-term—but not long-term—risk for behavioral problems among youth, it appears that the use of these assessments in forensic and legal practice may not be the correct setting for the application of psychopathy for risk-assessment purposes. Instead, it may be more worthwhile to include assessments of psychopathy for juvenile offenders as part of the intake process for institutional and community corrections placement, so that youth higher in psychopathy may be identified in order to more closely monitor misconduct and apply interventions designed to address antisocial thinking patterns and antisocial personality features (e.g. criminogenic risk factors; see Andrews & Bonta, 2003). Indeed, research has indicated that the therapeutic pessimism surrounding the amenability to treatment of individuals with psychopathic traits are unfounded (see Frick, 2002; Salekin, 2002; Skeem et al., 2003; 2011), as these individuals respond just as well to interventions designed to reduce problematic behavior than individuals with lower levels of these traits (Caldwell et al., 2012; Gretton, McBride, Hare, & O'Shaughnessy, 2000; Skeem, Monahan, & Mulvey, 2001). In addition, it may be worthwhile

to focus these assessments on identifying features that serve to discriminate psychopathy subtypes (e.g. anxiety, neurosis, and emotional self-control; see Karpman, 1948; Porter, 1996; Skeem et al., 2003), as youth identified with the secondary variant of psychopathy may be at a particular disadvantage when attempting to adjust to the stressors involved with adjustment to justice system settings (see Toch & Adams, 1989). Theoretical perspectives suggest that youth with secondary psychopathy may be particularly responsive to intervention efforts (Karpman, 1948; 1955; Porter, 1996).

The findings from the present study also suggest that single-point assessments of psychopathy in childhood and adolescence may not provide enough information regarding the long-term risk potential for this population. Indeed, the results from the present study indicated that analyses geared toward addressing change over time in psychopathic traits serve a better diagnostic function for long-term antisocial behavior than assessments conducted at a single point in time (which actually performed quite poorly in predicting adult offending and aggression). As such, it would behoove researchers and practitioners to conduct multiple assessments of psychopathic traits, particularly among children and adolescents, to better track changes in these traits over time and across developmental periods. This practice of applying periodic assessments of psychopathic traits may help to identify parallel changes in the short-term risk potential for antisocial behavior as the result improvements in maturity or gains through therapeutic intervention. In addition, these assessments should also track features of psychopathology and exposure to environmental insults (e.g. parental rejection and abuse and traumatic experiences) that have been found to amplify changes in psychopathic traits over time in this and other research (see Lynam et al., 2008). Identifying problems in these contextual domains would allow for practitioners to focus treatment resources across social and

environmental contexts might also serve to reduce continued psychopathic pathology and delinquent risk potential. Multisystemic therapeutic interventions (e.g. MST; Henggeler et al., 1997) may be particularly useful in this regard.

In general, the findings from the present study appear to coincide well with perspectives offered by Cauffman (2012) and Farrington and colleagues (2012). These researchers suggest that the consideration of developmental processes when processing youth exposed to the justice system can serve to produce better outcomes when trying to reduce adolescent problem behavior and reintegrating delinquent youth back to the community. Specifically, these researchers suggest that punitive justice system dispositions (which may result from high scores on single-point psychopathy assessments; see Seagrave & Grisso, 2002; Viljoen et al., 2010) should be adjusted to focus more on rehabilitative treatment options to help youth desist from problematic behavior. They also indicate that risk assessment practices tend to predict youth behavior well in the short-term, but not the long-term. Thus, these measures should not be used to inform punitive legal decision-making with long-term consequences (such as waiver to criminal court), but rather to identify developmentally appropriate interventions for youthful offenders. This is particularly important given that punitive legal system dispositions tend to increase rather than reduce reoffending among youthful offenders, indicating that alternative strategies to dealing with this population must be applied. To Cauffman (2012), “incontrovertible evidence [from the developmental psychology arena] shows that psychological development continues throughout adolescence and into young adulthood...the sanctions applied [by the justice system] should be appropriate to the offender’s developmental status, amenability to future change, and degree of culpability” (p. 756). In other words, the application of psychopathic traits among adolescents should be used to inform risk-status with the intention of identifying avenues to focus treatment

resources (also see Frick, 2002; Salekin et al. 2008) rather than to inform how best to punish youth exposed to the justice system.

Footnotes

1. Of course, the addition of callous-unemotional traits as a specifier for conduct disorder in the DSM-V appears to contradict this reasoning, but concerns regarding this and other concerns with updates in the DSM-V have resulted in a refusal by the National Institute of Mental Health to sponsor this updated version (see Lane, 2014).

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Table 1*Power Calculations (Required Sample Size^a) for the Proposed Study*

Effect Size	Rank-Order (Correlation) <i>Groups separate</i>	Repeated-Measures ANOVA <i>Groups together</i>	Logistic Regression <i>Groups together</i>	<i>t</i> -test <i>Groups together</i>	Negative Binomial Regression <i>Groups together</i>	Survival Analysis <i>Groups together</i>	Linear Multiple Regression <i>Groups together</i>
Small Effect	$N = 779$	$N = 592$ (Stdy 1 & Stdy 2) $N = 244$ (Stdy 2)	$N = 307$	$N = 620$	$N = 395$ (Stdy 2)	$N = 191$	$N = 546$
Medium Effect	$N = 82$	$N = 98$ (Stdy 1) $N = 42$ (Stdy 2)	$N = 39$	$N = 102$	$N = 55$ (Stdy 2)	$N = 26$	$N = 77$
Large Effect	$N = 26$	$N = 40$ (Stdy 1) $N = 18$ (Stdy 2)	$N = 20$	$N = 42$	$N = 25$ (Stdy 2)	---	$N = 36$

^a Reported sample sizes are the minimal numbers required to achieve the associated effect size^b Refers to repeated-measures ANOVA analyses conducted in the community post-incarceration.*Note:* Minimum power ($1 - \beta$) was .80, using an α -level of .05.

Table 2*Rank-Order Stability Estimates in YPI Scores for Entire Sample*

Psychopathy Scale	Pearson <i>r</i>	<i>ICC</i>
YPI Total	.410***	.406***
YPI Affective	.185†	.185*
YPI Interpersonal	.441***	.438***
YPI Lifestyle	.491***	.486***

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3*Rank-Order Stability Estimates for High and Low Adolescent Psychopathy Groups*

Scale Score	High Psychopathy Group		Low Psychopathy Group	
	Pearson <i>r</i>	<i>ICC</i>	Pearson <i>r</i>	<i>ICC</i>
YPI Total	.386*	.331*	.298*	.298*
YPI Affective	.001	.001	.251*	.248*
YPI Interpersonal	.520***	.499***	.180	.179
YPI Lifestyle	.358*	.347*	.493***	.492***

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 4*Rank-Order Stability Estimates in YPI Scores for Primary, Secondary, and Control Groups*

Scale Score	Primary Group		Secondary Group		Control Group	
	Pearson <i>r</i>	ICC	Pearson <i>r</i>	ICC	Pearson <i>r</i>	ICC
YPI Total	.394†	.325†	.359	.314†	.298*	.298*
Affective	-.374	-.245	.119	.118	.251*	.248*
Interpersonal	.624**	.598**	.430†	.413*	.180	.179
Lifestyle	.402†	.383*	.293	.288†	.493***	.492***

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 5*Individuals Falling into Each Reliable Change Index Change Group Across the Entire Sample*

Scale Score	Significant Decrease	No Change	Significant Increase
YPI Total	28	49	11
YPI Affective	18	69	1
YPI Interpersonal	25	52	11
YPI Lifestyle	21	63	4

Note: Numbers in each cell indicate the number of individuals falling into each change category

Table 6*YPI Total and Factor Reliable Change Index Scores between High and Low Psychopathy Youth*

Psychopathy Group	Significant Decrease	No Change	Significant Increase
	Total Scores^a		
High Psychopathy	20	20	0
Low Psychopathy	8	29	11
	Affective Scores^b		
High Psychopathy	11	29	0
Low Psychopathy	7	40	1
	Interpersonal Scores^c		
High Psychopathy	18	21	1
Low Psychopathy	7	31	10
	Lifestyle Impulsivity Scores^d		
High Psychopathy	15	25	0
Low Psychopathy	6	38	4

^a $\chi^2(2) = 17.211, p < .001$ ^b $\chi^2(2) = 2.94, p > .10$ ^c $\chi^2(2) = 13.511, p = .001$ ^d $\chi^2(2) = 9.894, p < .01$

Table 7*YPI Total and Factor Reliable Change Index Groups between Adolescent Psychopathy Subtypes*

Subtype Group	Significant Decrease	No Change	Significant Increase
	Total Scores^a		
Primary	8	11	0
Secondary	12	9	0
Low Psychopathy	8	29	11
	Affective Scores^b		
Primary	6	13	0
Secondary	5	16	0
Low Psychopathy	7	40	1
	Interpersonal Scores^c		
Primary	8	11	0
Secondary	10	10	1
Low Psychopathy	7	31	10
	Lifestyle Impulsivity Scores^d		
Primary	8	11	0
Secondary	7	14	0
Low Psychopathy	6	38	4

^a $\chi^2(4) = 18.325, p = .001$ ^b $\chi^2(4) = 3.311, p > .10$ ^c $\chi^2(4) = 13.977, p < .01$ ^d $\chi^2(4) = 10.323, p < .05$

Table 8*Diagnostic Stability Estimates for Psychopathy Cut-Offs in Adolescence and Adulthood*

Cut-Off	% Above Cut at Both	% Below Cut at Both	Sensitivity	Specificity	Likelihood Ratio
“Diagnostic” ¹	14.8%	48.9%	.722	.614	1.870
-----	-----	-----	-----	-----	-----
Top 30%	18.2%	59.1%	.615	.839	3.820
Top 20%	11.4%	71.6%	.555	.900	5.550
Top 10%	4.5%	80.7%	.364	.922	4.667

¹ Using a cut-off of 121.5 as defined by Cauffman et al. (2009)

Table 9

Internal-Consistency Reliability Analyses (Cronbach's alpha) for Youth High and Low in Psychopathy

Assessment Point	Psychopathy Index	Low Psych Group	High Psych Group
Baseline	YPI Total	.80	.69
	YPI Affective	.56	.53
	YPI Interpersonal	.78	.75
	YPI Lifestyle	.72	.60
Follow-up	YPI Total	.87	.91
	YPI Affective	.70	.70
	YPI Interpersonal	.83	.91
	YPI Lifestyle	.79	.74

Figure 1

Recruitment Tree for Follow-up Sample

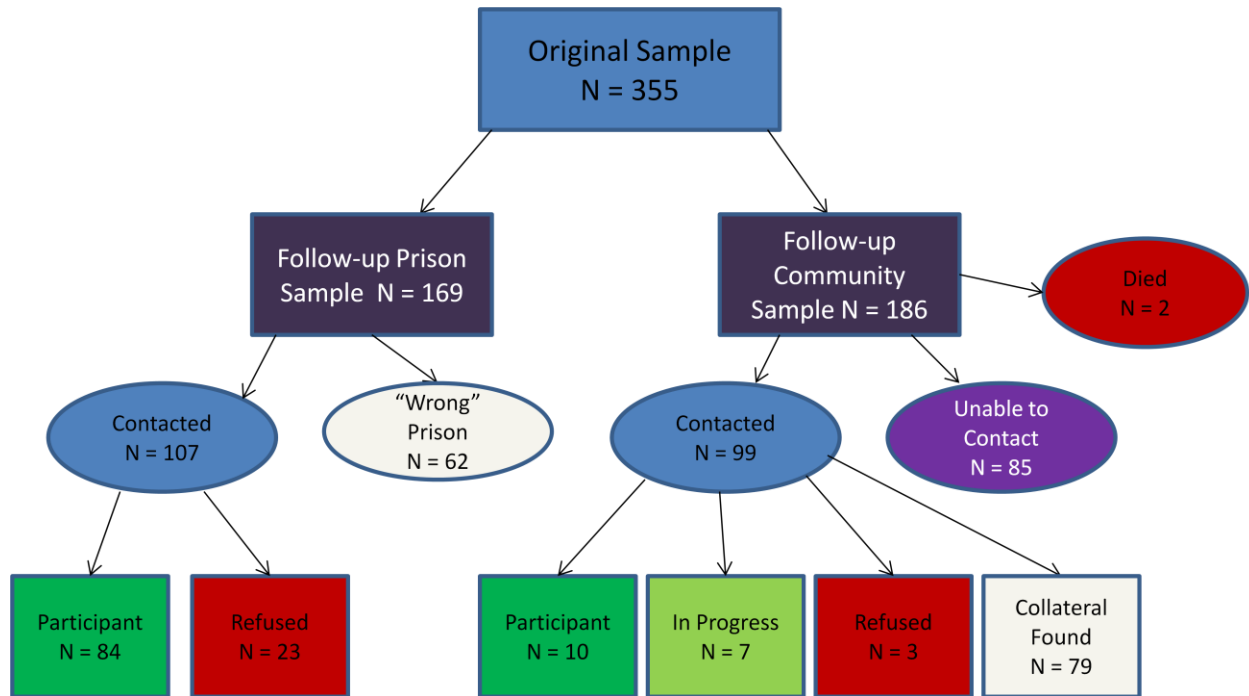


Figure 2

Repeated Measures ANOVA High vs. Low Psychopathy Change in Total Scores over Time

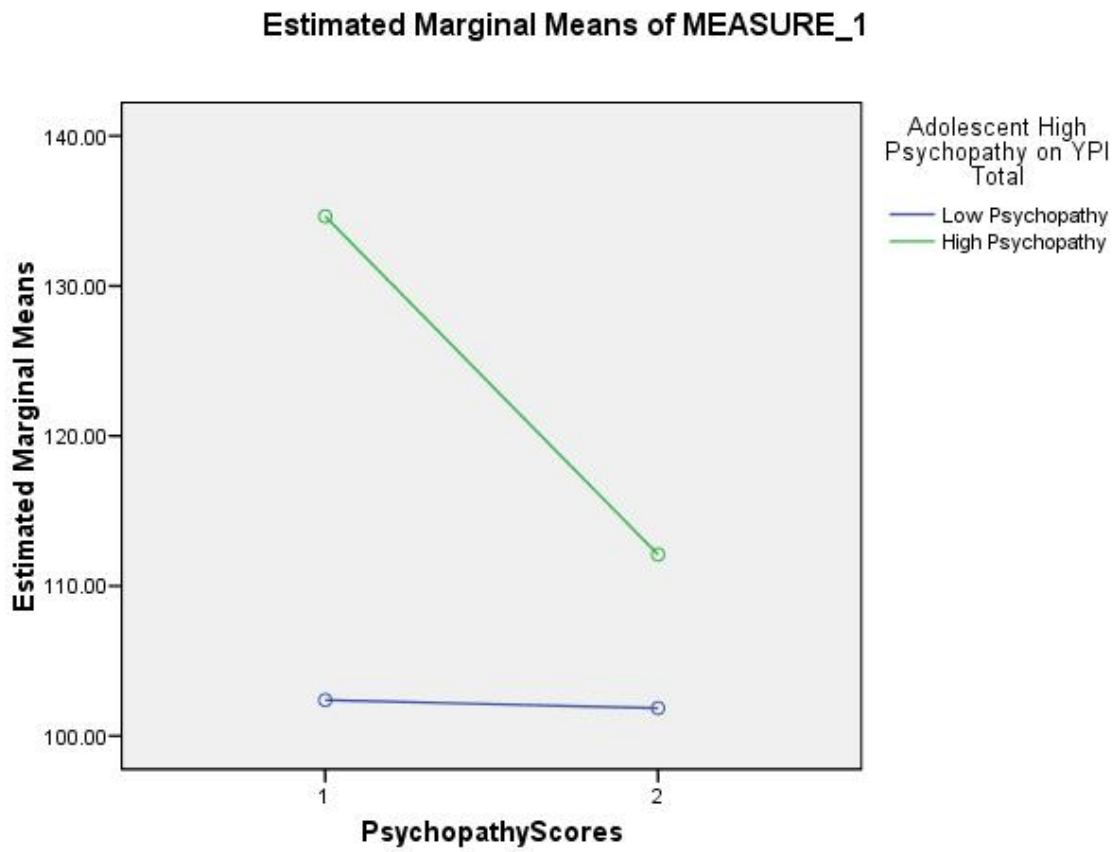


Figure 3

Repeated Measures ANOVA Psychopathy Subtype Change in Total Scores over Time

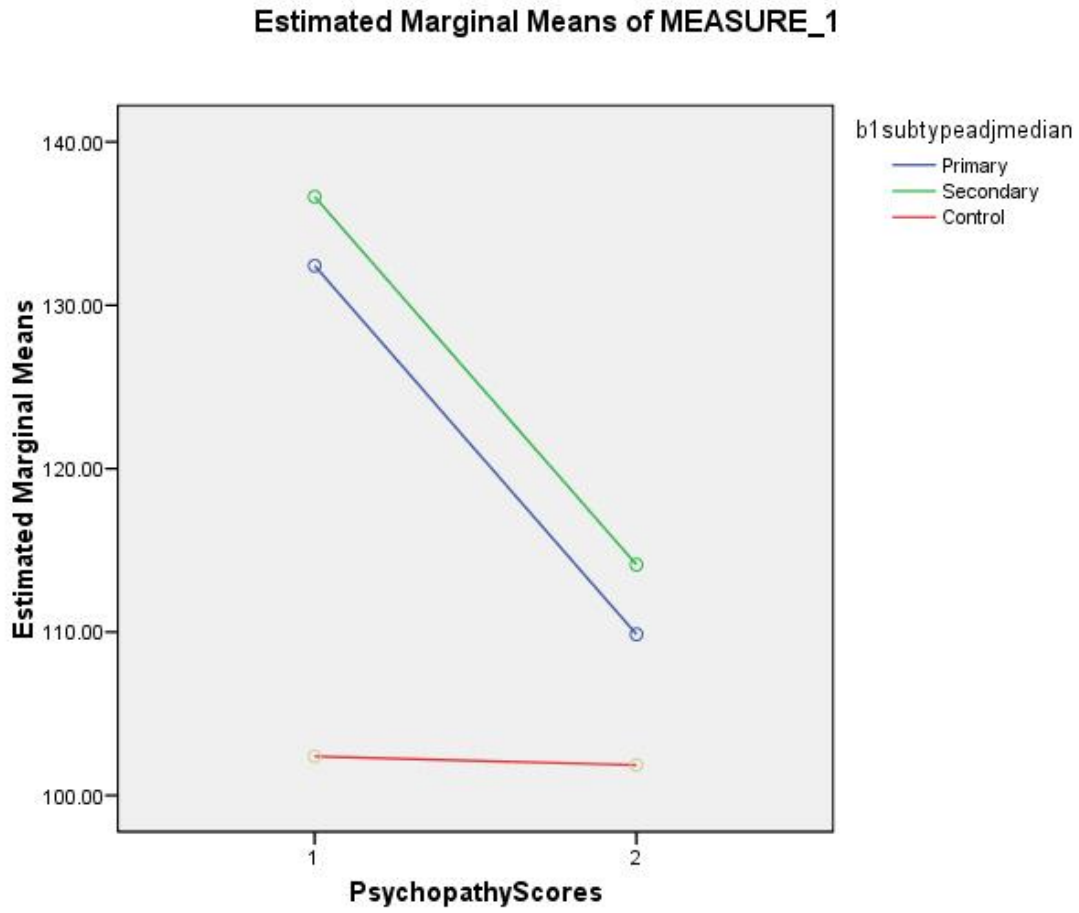


Figure 4

Repeated Measures ANOVA Psychopathy Subtype Change in Affective Scores over Time

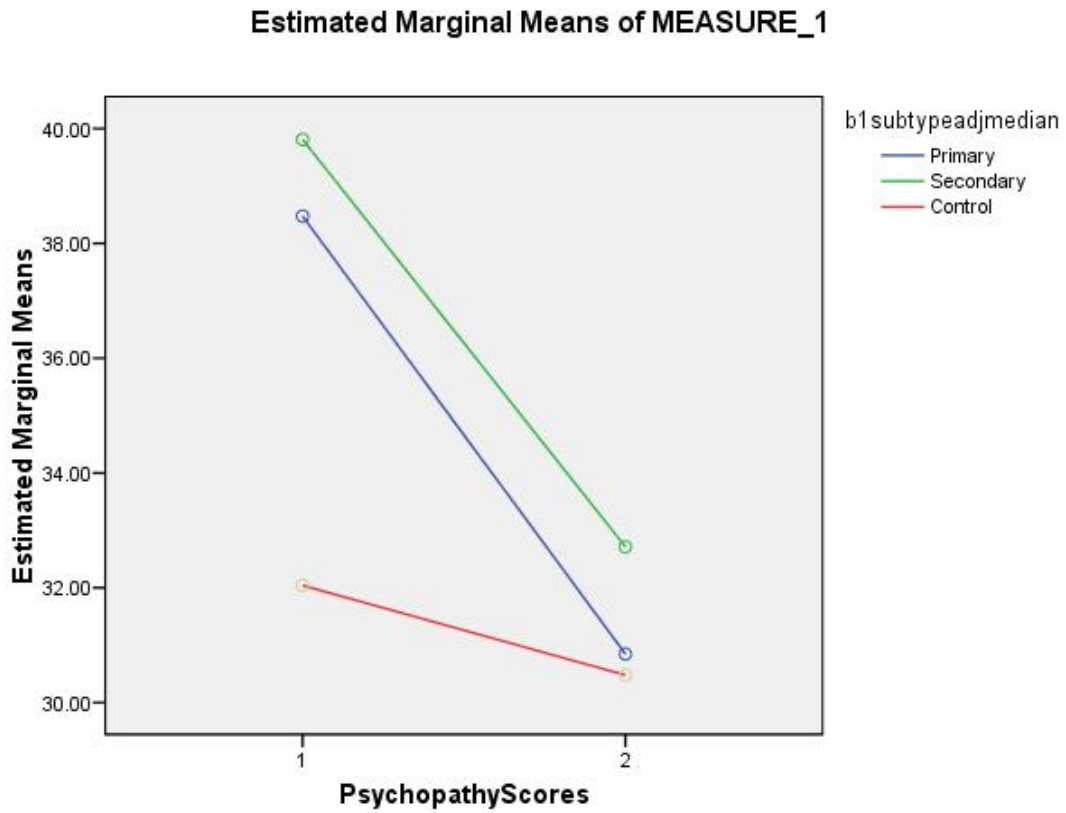


Figure 5

Repeated Measures ANOVA Psychopathy Subtype Change in Interpersonal Scores over Time

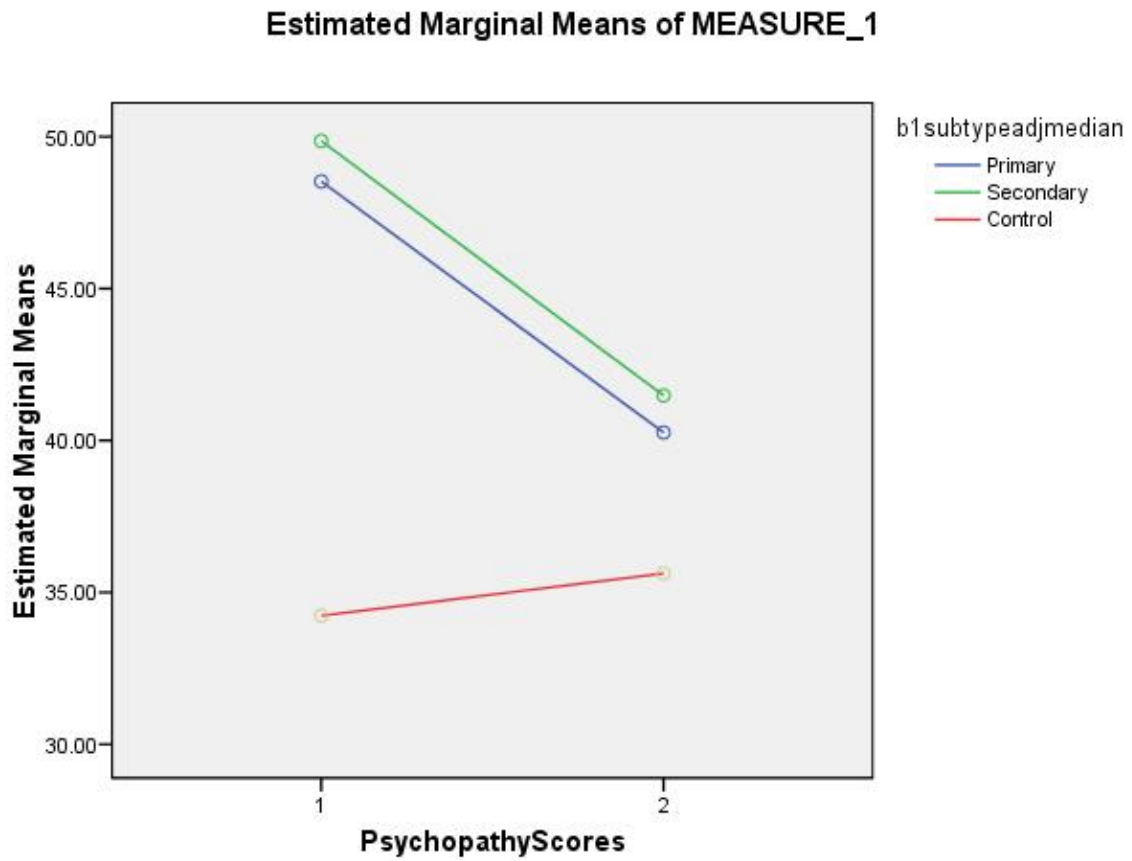


Figure 6

Repeated Measures ANOVA Psychopathy Subtype Change in Lifestyle Scores over Time

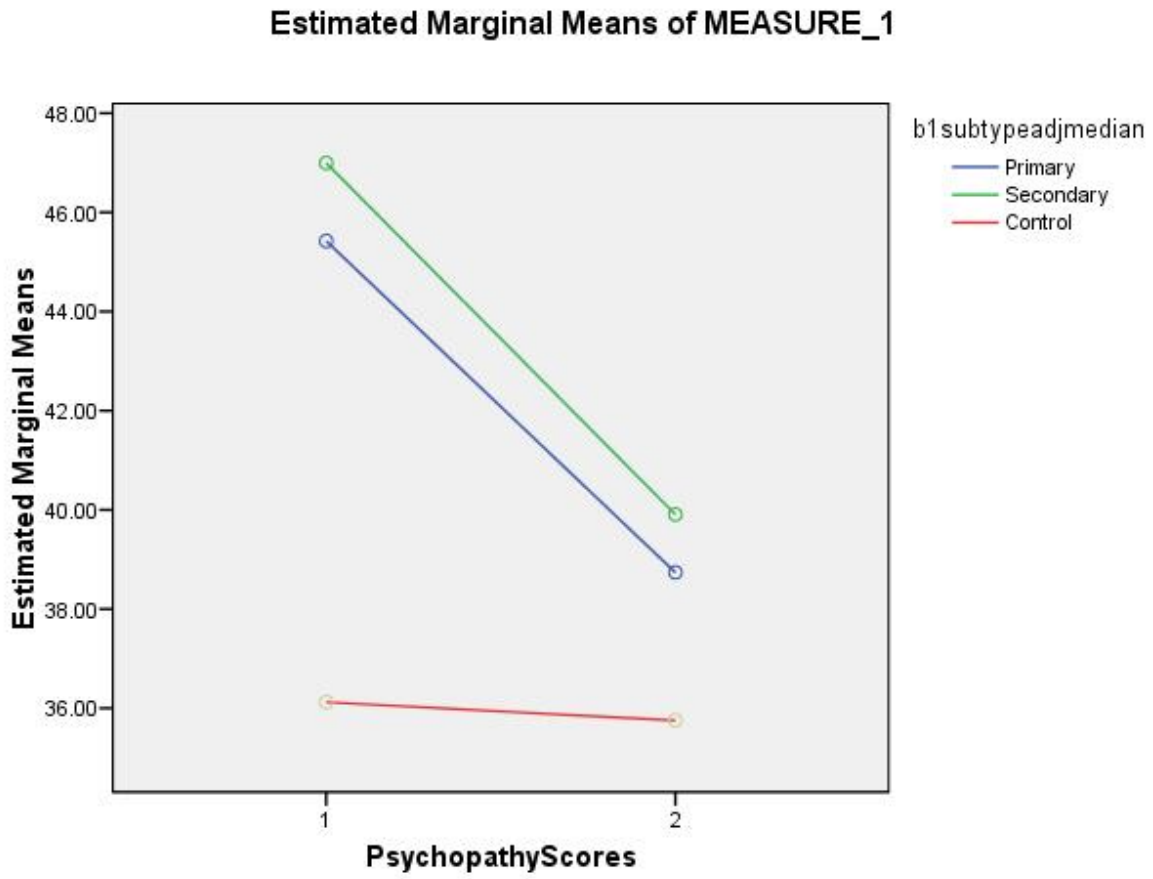


Figure 7

Repeated Measures ANOVA High vs. Low Psychopathy Change in Total Scores over Time

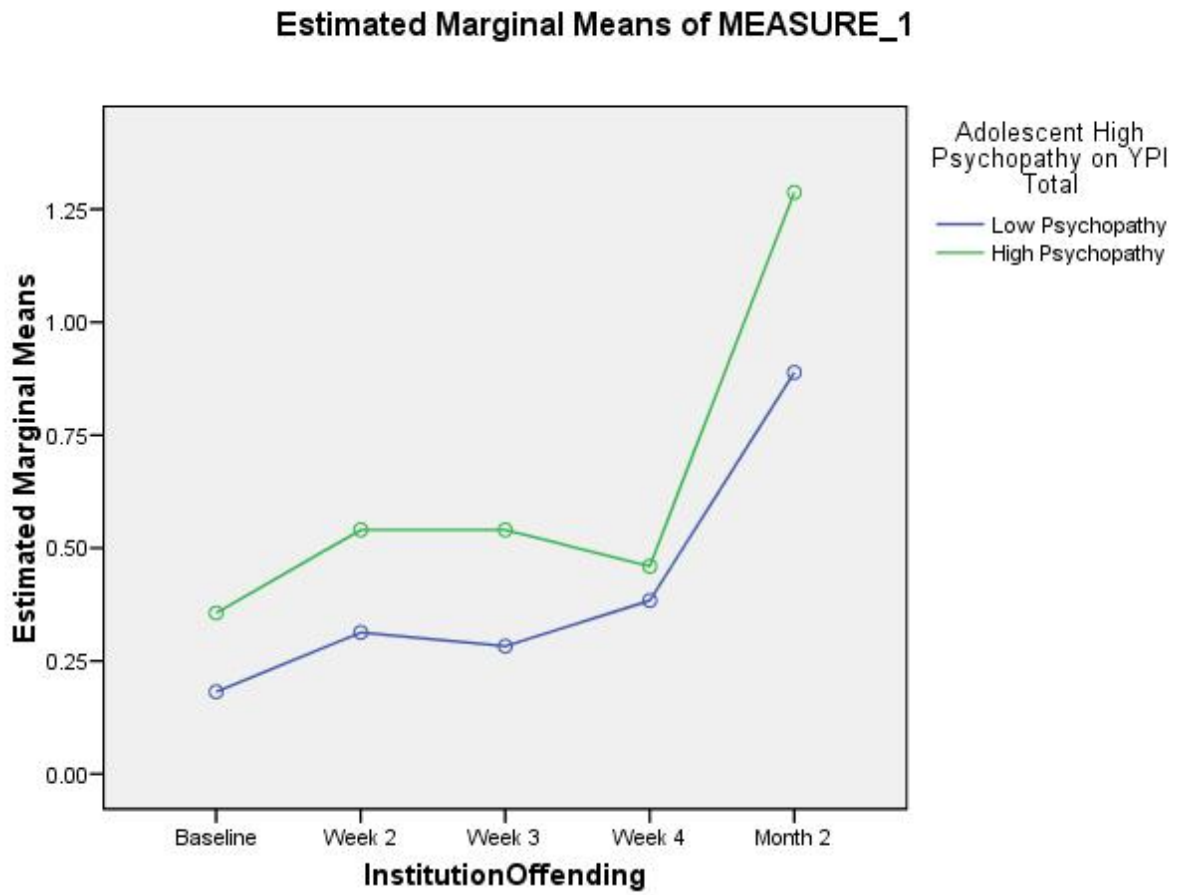


Figure 8

Repeated Measures ANOVA Psychopathy Subtype Change in Total Scores over Time

