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Complex Trauma Exposure and Psychological Outcomes in Incarcerated Juvenile Offenders

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COMPLEX TRAUMA EXPOSURE AND PSYCHOLOGICAL OUTCOMES IN INCARCERATED JUVENILE OFFENDERS

by

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Under the Direction of Gregory Jurkovic

ABSTRACT

This study examined the extent to which the lifetime traumatic and stressful experiences of incarcerated youths cluster in meaningful and understandable ways. It also evaluated the differential effects of various types of these events on a variety of psychosocial outcomes for this population. The sample consisted of 185 incarcerated male and female adolescents (ages 12-19). Confirmatory factor analysis results suggested that an empirically-derived model based on negative event type (i.e., Community Violence, Interpersonal trauma/stress, and Loss) better predicted how negative life events group together on the Adolescent Stress and Trauma Exposure Questionnaire -Version 2 (ASTEQ-2) than the model based on a traditional framework of traumatic versus less severe stressful events in this population. Further, the empirically-derived factors varied substantially in their ability to uniquely predict different psychosocial outcomes, assessed with the Trauma Symptom Checklist for Children (TSC-C) and the Structured Interview for Disorders of Extreme Stress, Adolescent version (SIDES-A). For example, the Interpersonal trauma/stress factor accounted for

substantially more unshared variance than other factors in TSC-C Depression and Posttraumatic stress outcomes, while the Community Violence factor accounted for substantially more unshared variance than other factors in TSC-C Anger and SIDES-A Self-Destructive Behavior outcomes. Results both partially support prior research, while also exposing its limitations with regard to the inappropriate generalization of a culturally bound trauma framework to traditionally marginalized adolescent populations.

INDEX WORDS: Complex trauma exposure, Adolescence, Juvenile offenders, Psychological outcomes, Confirmatory factor analysis, Underserved, Ethnicity, Forensic

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DEDICATION

This dissertation is dedicated to the youths who participated in the study. Without their willingness to engage in an honest discussion about their most difficult life experiences, meaningful contributions by this project to the field of psychology would not have been possible.

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CHAPTER 1

Introduction

Incarcerated youths are a unique group in that they evidence high levels of exposure to both traumatic and stressful life events, as well as a range of internalizing and externalizing psychological symptomatology. Recent qualitative and quantitative research on trauma in adolescents suggests that chronic and challenging environmental factors surrounding acute traumatic exposure play important roles in the level and type of psychological and behavioral response (Ball et al., 2006; Jones & Kafatsios, 2005). Similar research suggests that it may be statistically and theoretically inappropriate to separate discrete traumatic events from the myriad of other stressful life experiences that comprise the environmental contexts in which those traumatic events occurred in incarcerated youth (Jurkovic, Fasulo, Gorka, Ball, Armistead, & Zucker, manuscript in progress), and that less severe but chronic exposure to negative life events, such as emotional neglect, may better predict certain psychological outcomes than exposure to an isolated, severe traumatic event (Brunner, Parzer, Schuld, & Resch, 2000). This perspective is a new one in the field of research on trauma and posttraumatic stress and implies that we must better understand the broader environmental contexts and experiences of incarcerated youths if we are to understand, predict, and attempt to change their psychological and behavioral trajectories.

Given the pervasive and long-standing dysfunctional histories with which the vast majority of incarcerated youths present, traditional psychological conceptualizations regarding the impact of individual, circumscribed traumatic events on otherwise

"normal" functioning and development may need to be reconsidered in this population. This reconsideration is consistent with a new clinical framework ("complex trauma;" Cook et al., 2003; Cook et al., 2005; Spinazzola et al., 2005) being applied to children and adolescents exposed to ongoing and intense levels of trauma and stress. However, this framework has generally not been used as a basis for research or clinical work with forensic adolescent populations. Further, with a complex trauma perspective comes a basic need to shift the ways that we measure the relationship between the past experiences and current psychosocial and behavioral dysfunction of traumatized youths. This need has been addressed in neither forensic nor community samples of youths to date.

The current study begins to address these issues in two ways, using a sample of 185 incarcerated adolescent males and females (ages 12-19). First, it uses Confirmatory Factor Analysis (CFA) to establish the factor structure of a new self-report measure of lifetime trauma and stress exposure, the Adolescent Stress and Trauma Exposure Questionnaire – Version 2 (ASTEQ-2; Jurkovic et al., manuscript in progress). Pilot work using Exploratory Factor Analysis (EFA) with a prior version of this survey identified three meaningful factors representing the self-reported occurrence of separate groups of trauma and stress exposure in this population. Second, this study used these identified factors as a basis for examining the relationship between different types of stressful and traumatic experience histories and current self-reported psychological distress and dysfunction.

CHAPTER 2

Background and Significance

Trauma Prevalence in Youth

A substantial portion of today's youth have experienced a wide range of stressful and potentially traumatic events over the course of their childhood and adolescence, such as sexual and physical abuse, neglect, community violence, and various forms of family dysfunction. For example, Boney-McCoy and Finkelhor (1995) used a phone-interview approach to examine national rates of violent victimization for 2000 randomly selected boys and girls, ages 10 through 16. Results suggested that one-third of all girls and nearly half of all boys had experienced at least one physically or sexually violent victimization in their lifetime. Other more recent studies using representative samples of children and adolescents have found rates of child maltreatment ranging from 15 to 20% (Breslau, 2002; Brown, 2002).

Child maltreatment is probably the most salient form of trauma identified in this country, and reports of confirmed abuse and neglect are on the rise. In 1998, for example, nearly 1,000,000 cases of child maltreatment (including sexual abuse, physical abuse, and emotional and physical neglect) were *confirmed* as serious abuse and/or neglect cases (U.S. Department of Health and Human Services, 2000). In addition, from 1986 to 1993, the number of children identified as having been seriously injured by maltreatment increased fourfold (from 140,000 to 600,000). In addition to child maltreatment, many of today's maltreated youth are also often exposed to a range of

other potentially negative environmental factors, such as impoverished neighborhoods, community violence, guns, and media violence. In some areas of the U.S., the exposure to environmental stressors can be quite high. For example, one study found that, of a sample of school-aged children in Chicago, one-third had already witnessed a homicide, and two-thirds had witnessed a serious assault (Bell & Jenkins, 1993). In another, 32% of Washington, D.C. children and over 50% of New Orleans children had been victims of community violence (Richters & Martinez, 1993).

It is important to note that, although only two main types of trauma exposure in youth (abuse and community violence) are documented in the studies discussed above, there are a myriad of other distressing events less often discussed in the literature, such as family conflict (Sigfusdottir, Farkas, & Silver, 2004), natural disasters (Asarnow et al., 1999), and non-traumatic life stressors (Aseltine, Gore, & Gordon, 2000). One goal of the current study is to identify many of these additional types of events in a unique population of youth (incarcerated adolescents) that has often been exposed to a wide range of traumas and stressors rarely experienced by the general youth population.

Trauma and Psychological Dysfunction in Youth

An array of research studies has demonstrated that youths exposed to traumatic events are more susceptible to psychological and behavioral impairments across several domains of functioning. History of traumatic experiences has most often been associated with a heightened risk for development of affective disorders in youth, such as depression (Brown, Cohen, Johnson, & Smailes, 1999; Durant, Cadenhead, Pendergrast, Stevens, & Linder, 1994; Kilpatrick et al., 2003; Putnam, 2003), as well as anxiety and

posttraumatic-stress symptomatology (Kilpatrick et al., 2003; Pine and Cohen, 2002). This line of research is consistent with evidence that early childhood trauma impacts that child's ability to regulate his or her own internal emotional states (Kaufman, Plotsky, & Nemeroff, 2000). Other research has posited a relationship between traumatic exposure and later behavioral dysregulation and delinquency (Greenwald, 2002; Herrenkohl, Egolf, & Herrenkohl, 1997; Kendall-Tackett and Eckenrode, 1996; Ruchkin, Schwab-Stone, Koposov, Vermeiren, & Steiner, 2002). Abused and neglected children have been shown to be more likely to be suspended and held back in school (Kendall-Tackett & Eckenrode, 1996), to be involved in the court system (Alfaro, 1981), and to commit violent acts (Rivara, Shepherd, Farrington, Richmond, & Cannon, 1995). In addition, Dodge, Bates, and Pettit (1990) found in their longitudinal study a relationship between early physical abuse and subsequent childhood aggression, even after controlling for a diverse set of demographic and biological factors. In sum, researchers find that trauma often results in a variety of behavioral and psychological difficulties for diverse samples of youth.

While the research discussed above is helpful in identifying the prevalence of trauma exposure in the general youth population, as well as its relation to psychological and behavioral difficulties, incarcerated juvenile offenders are a unique and important population to examine with respect to the constructs of psychological trauma and distress. Research has documented that incarcerated juvenile offenders have extensive traumatic histories including trauma exposure on a daily basis while in detention facilities, such as "frequent fighting, racial strife, fear of violence (including assault and rape), staff brutality, anonymity, and boredom" (Becker & Rickel, 1998, p. 233). These

factors could be expected to increase psychological distress in the adolescent and significantly reduce the possibility of rehabilitation (Becker & Rickel, 1998). This population is often underserved by the mental health field, yet arguably the segment of our society's youth most in need of such services. One study of service utilization comparing incarcerated, outpatient, and psychiatrically hospitalized youth found that incarcerated youth had received significantly lower levels of prior mental health care than the other groups (Pumariega et al., 1999).

Research suggests that a high percentage of both male and female delinquent youths have traumatic histories and, as a result, are at risk for significant mental health difficulties (Ford & Linney, 1995) including posttraumatic stress disorder (PTSD; Burton et al., 1994; Erwin, Newman, McMackin, Morrissey, & Kaloupek, 2000). For instance, identified rates of psychiatric disorders for incarcerated youths range from 30% to 72% (Atkins et al., 1999; Domalanta, Risser, Roberts, & Risser, 2003; U.S. Department of Justice, 1997). Additionally, Cauffman, Feldman, Waterman, and Steiner (1998) found that a large portion of a sample of incarcerated females had been exposed to multiple traumas. Other research has suggested that dangerously violent high school students are exposed to or witness dramatically more violence than matched, non-violent controls, and that those adolescents have comparatively elevated levels of psychopathology (Flannery, Singer, & Wester, 2001). Research has also documented the relationship between childhood physical and/or sexual abuse history and subsequent adolescent sexual offending (Burton, 2000; Johnson & Knight, 2000). In sum, the current literature suggests that juvenile offenders have often been exposed to a range of circumscribed traumatic events, and that they are also suffering from a variety of psychological

difficulties. In fact, given the variability in types of mental health outcomes for youths exposed to trauma, some researchers posit that trauma exposure may act as a general risk factor for the development of psychological and behavioral dysfunction (e.g. Steinberg and Avenevoli, 2000).

Taken together, there is substantial evidence demonstrating the impact of traumatic exposure on both delinquent and non-delinquent youths' development, and the literature clearly suggests that trauma exposure can have particular influences on the later development of delinquent behavior. Despite this evidence, however, it only provides a starting point to begin to understand the relationship between trauma and psychological distress in delinquent youth. The literature still lacks a full understanding of the specific psychological and behavioral trajectories that can result from different types of traumas or clusters of traumas in this population, as well as a framework for understanding the mechanisms through which these clusters of trauma exposure lead to such trajectories. The current study aims to address this need.

Multiple Trauma Exposures and Associated Psychological Distress

Much of the research cited earlier on trauma exposure and resulting psychological and behavioral dysfunction in children and adolescents focused on clearly identifiable, individual stressful and/or traumatic events, such as child maltreatment, witnessing of domestic or community violence, and natural disasters. However, many children and adolescents experience intense, ongoing exposure to single or multiple types of traumatic events, and/or exposure over a circumscribed period of time to a wide range of traumatic or potentially traumatic events (Bell, 1991; Dubrow & Garbarino, 1989; Groves, Zuckerman, Marans, & Cohen, 1993). As the number of stressors to which children are

exposed increases, so does the risk that their psychological and behavioral functioning will be adversely affected (Garbarino & Kostelny, 1997; Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987; Osofsky, 1995). Garbarino and his colleagues (2001; Garbarino, Kostelny, & Dubrow, 1991) use the term "urban war zones" to describe the context in which many urban youth live, and suggest an "accumulation of risk" model to describe the relationship between number of risk factors in a youth's environment and the likelihood that that youth's psychological and behavioral functioning will be negatively impacted. The implication of this model is that those youths living in the highest risk environments will also be the most likely to demonstrate negative effects in these environments. This notion is supported by one finding that all males exposed to the combination of highly dangerous, low-income communities and families with low resources exhibited disrupted psychosocial functioning over a two-year period (Tolan, 1996).

A range of studies, then, has recognized that youths are often exposed to multiple traumatic events, and several authors have proposed theoretical frameworks for understanding the relationship between increased number of risk factors and increased levels of distress and behavioral dysfunction. However, empirical evaluation of the actual relationship between number of traumatic exposures and an associated increase in psychological distress has been relatively scarce. Most of those studies exploring this question have focused on populations that would not generalize to delinquent youths and their unique life contexts. For example, Green et al. (2000) found that college females with multiple exposures evidenced significantly higher traumatic symptomatology than those with either no traumatic exposure or those exposed to single events of various

kinds. Krupnik et al. (2004), examining an adolescent female college sample, also determined that 82% of participants with a history of multiple traumatic exposures met criteria for at least one lifetime Axis I disorder; this rate was significantly higher than participants with either no traumatic histories or single episodes of bereavement, physical assault, or sexual assault. Other studies of adult women have reported similar results suggesting that multiple exposures are positively related with increased levels of distress across a variety of domains, such as physical symptoms, psychological distress, substance use, and traditional posttraumatic stress symptomatology (Follette, Polusny, Bechtle, & Naugle, 1996; McCauley et al., 1997). Finally, in a nationally representative sample of adolescents and adults aged 15-54, Kessler and Kendler (1997) found an additive effect of number of childhood adversities reported on the likelihood of subsequently experiencing a psychiatric disorder. These authors also warned against studies examining the relationship between single exposure events and specific types of psychopathology, given the extensive comorbidity identified.

In one of the few studies examining the cumulative effects of exposure on symptomatology in male juvenile offenders, Burton, Foy, Bwanausi, Johnson, and Moore (1994) found a positive association between the number of different types of traumatic events experienced and the likelihood of meeting criteria for either full or partial PTSD. Consistent with this finding, Wood, Foy, Layne, Pynoos, and James (2002) found that higher levels of exposure to both physical punishment and community violence accounted for unique variance in levels of posttraumatic stress symptomatology in incarcerated, adolescent males and females.

In addition, a few authors have also explored the extent to which certain types of traumas and stressors are differentially predictive of psychological outcomes. Pelcovitz et al. (1997), for example, found that responses across several of the domains were differentially predicted by type of traumatic exposure. Specifically, early onset interpersonal abuse (first sexual abuse or physical abuse occurrence before the age of 13) was a stronger predictor of dysfunction across nearly all domains than late onset interpersonal abuse (first sexual abuse or physical abuse occurrence after the age of 13); both types of interpersonal abuse were more robust predictors of dysfunction than other types of potentially traumatic experiences, such as exposure to natural disasters (Pelcovitz et al., 1997).

Taken together, the research described above suggests an additive effect of traumatic exposure on the subsequent development of psychological dysfunction. Additionally, research suggests that even specific types of trauma exposure tend to be nonspecific in their prediction of future psychopathology and dysfunction. However, there has been little to no examination of these questions in juvenile offenders. Additionally, it is possible that *multiple* traumas and stressors of certain types may differentially predict various psychosocial outcomes, a condition more likely to occur in marginalized populations such as incarcerated youths. However, no known research to date has addressed these questions in this population. Conversely, it is also expected that different types of stressful experiences may differentially predict various psychosocial difficulties, as implied by a summary of the literature cited above. However, no known research to date has examined the magnitude of unique predictive ability of specific

outcomes by various types of exposure through simultaneous regression analyses in a population of incarcerated youths.

Complex Trauma Exposure and Psychological Distress in Youth

One framework recently developed for understanding the diverse range of traumatic stressors and resulting psychological and behavioral symptomatology is termed "complex trauma" (Cook, Blaustein, Spinazzola, & van der Kolk, 2003; Cook et al., 2005; Spinnazola et al., 2005). The framework was developed, in part, based on the recognition by researchers that the diagnosis of PTSD has often been insufficient for capturing the constellation of symptoms exhibited by many individuals with histories of traumatic exposure (see Pelcovitz et al., 1997, for a review of this issue). The complex trauma framework addresses this issue to some extent by identifying several broad domains of impairment that often occur in children and adolescents exposed to ongoing and/or extreme levels of stress (Cook et al., 2005). These identified impairments include many of the outcomes already delineated in research described above. One of the main tenets of complex trauma, however, is that the development of these impairments is due largely to an ongoing lack of safety in one's environment, usually beginning in early childhood within the caregiver system (Cicchetti & Lynch, 1995). These authors argue that early experiences predispose the child to view the world as unsafe, and affects subsequent development in a variety of ways. This is consistent with Garbarino's concept of "social maps" – children's affective, cognitive, and relational views of themselves and the world around them - and the impact of these maps on the emotional and behavioral development of children and adolescents (Garbarino, 1995; Garbarino, 2001). Other authors have drawn similar connections between processing of social and

emotional information and resulting behavioral disruption (Aseltine et al., 2000; Garcia, Shaw, Winslow, & Yaggi, 2000; Dodge, Pettit, Bates, & Valente, 1995).

Despite evidence pointing to the likelihood that a substantial portion of incarcerated juvenile offenders are suffering from many impairments simultaneously, no known studies to date have applied a complex trauma framework to this population in order to identify the range of such symptoms across and within incarcerated youth. Further, even within this complex trauma framework, the focus has historically been on the complexity of symptomatology, without sufficient attention to the complexity of the exposure that gives rise to such symptomatology. As such, there is very little research that attempts to examine the relative contributions of different *types* of traumatic experiences to various psychological outcomes, and specifically no research examining these questions in incarcerated juvenile offenders. Given the research described above, taking a broader view of both objective experiences and resulting subjective symptomatology by using a complex trauma framework is warranted in this population. Additionally, one advantage to utilizing a population of incarcerated youth to examine complex trauma as a theoretical construct is that, while many juvenile offenders do have some broad negative experiences in common, such as exposure to dangerous environments and general family dysfunction, exposure to specific types and numbers of events tends to vary quite widely from youth to youth, making statistical comparisons of the effects of different types of events easier within one population. For instance, recent research in this area has shown that cumulative exposure to trauma is normally distributed within this population (Ball, et al., 2006; Jurkovic et al., manuscript in progress).

Clinical Implications

One step towards advocating for increases in mental health services for incarcerated youth is to conduct research identifying that there are concrete antecedents to their current psychological and behavioral dysfunction. Although some research has already done this with respect to *individual* events, no research study has looked at a bigger picture of trauma and where therapeutic interventions might be most effective given the complex and pervasive nature of these youths' exposure to stressful and/or traumatic events. Once this evidence is compiled, policymakers may be more likely to take a less "blaming" stance towards these youths and support interventions that are rehabilitative in nature. The research reviewed earlier suggests that marginalized youths often evidence both exposure to a wide range of traumatic and/or stressful life events and environments, as well as a wide range of responses to these exposures. A natural "first step" to developing interventions designed to change these youths' current trajectories, then, is to identify whether or not certain types of traumatic experiences may be associated with different kinds of psychological and behavioral outcomes.

Measurement Issues in Complex Trauma

To help better conceptualize complex trauma and to organize intelligent research on the subject, it is important that the field develop measures designed from this framework. It is not surprising that most scales evaluating responses to stress are based around symptom clusters according to the DSM-IV criteria for posttraumatic stress disorder (PTSD; American Psychological Association, 1994). However, subthreshold "traumatic" events may also be important as contextual factors that facilitate more intense reactions to severe traumas, and may even have their own cumulative effects; at a

minimum, less severe stressors could potentially serve to further concretize a youth's developing social processing problems originally established by severe stressors. Recent pilot work in this area with incarcerated youth has supported these hypotheses.

Specifically, Jurkovic et al. (manuscript in progress) used a new trauma and life stress exposure measure (Adolescent Stress and Trauma Exposure Questionnaire; ASTEQ) to evaluate lifetime exposure rates in a sample of incarcerated adolescent males and females. The authors conducted an exploratory factor analysis on a set of 48 (Yes/No) exposure items using a statistically appropriate approach for binary data (MINRES extraction method for a matrix of tetrachoric correlations; Joreskog, 2002), and derived 3 main factors: Community Violence, Interpersonal Trauma/Stress, and Loss exposure. In addition to finding that the items grouped by event type rather than severity, the authors found a correlation of .74 (a result approaching multicollinearity) between self-reported total number of lifetime traumatic experiences and total number of less severe negative life stressors. These results provide initial evidence that exposure to traumatic and stressful events may break down by type of event, rather than by event severity, and that it may not be appropriate to conceptualize "trauma" and "life stress" as discrete constructs in this population.

It is worth noting here that the structure of the DSM-IV (American Psychiatric Association, 1994) is designed in manner that supports a conceptualization of traumatic events and negative life stressors as not only occurring separately, but differing dramatically in the extent to which each is expected to have an influence on psychiatric functioning. For example, a person's posttraumatic symptoms make him or her eligible for a diagnosis of PTSD only if he or she has been exposed to an event that "involved

actual or threatened death or serious injury, or a threat to the physical integrity of self or others" (p.427), and "the person's response involved intense fear, helplessness, or horror" (p.428). In theory, then, a person cannot suffer from PTSD if that exact same symptom cluster has an etiology related to "less severe" stress exposure. Alternatively, the DSM-IV does allow for a diagnosis of Adjustment Disorder (pp. 623-627) based on dysfunctional symptoms or behaviors "in response to an identifiable stressor" (Criterion A), which need not be approaching the threshold of severity identified by PTSD's Criterion A. However, this diagnosis can only be given if the resulting psychosocial distress exhibited is "in excess of what would be expected to the stressor" (Criterion B.1). Paradoxically, one must then infer that the "identifiable stressor" is by nature not meaningfully stressful, given that to have negative symptoms as a result of it is a dysfunctional response.

Further, the DSM-IV does allow for the documentation of other "Psychosocial and Environmental Problems" through Axis IV of its Multiaxial Assessment system (pp. 29-30). This axis is valuable to some degree in that it allows for a clinician to acknowledge and describe other negative life events in a person's life. In practice, however, Axis IV functions primarily as a "catch-all" for nominally describing the patient's current environmental stressors that are not otherwise captured diagnostically. That is, Axis IV is not designed in a manner that helps conceptualize the ways that those stressors may be influencing the patient's diagnostic presentation as identified by Axes I, II, or V. In fact, instructions for determining a patient's Global Assessment of Functioning (GAF) explicitly ask the clinician not to take environmental or physical limitations into account when assigning a GAF score (p.32).

In sum, the DSM-IV does not provide for a meaningful conceptualization of the effects of environmental, non-traumatic (i.e., non life-threatening) negative life events on a person's functioning. Instead, it is designed explicitly to conceptualize a person's psychosocial functioning *separate* from any effects of his or her environment. However, this conceptualization may be flawed, particularly for populations such as low-income and underserved youths exposed to high levels of environmental stress. The current study aims, in part, to test this conceptualization of the relationship between trauma and stress with a sample of incarcerated and predominantly ethnic minority youths using Confirmatory Factor Analysis (CFA). To date, no known study has used CFA as a means for examining how traumatic and stressful events co-occur, or for comparing alternative models of trauma exposure to one another in order to determine which model best estimates the pattern of exposure in this population.

To evaluate exposure to potentially traumatic and stressful events from this alternative, complex trauma framework, it makes sense to use measures that evaluate a range of potentially stressful and/or traumatic events, then statistically derive subscales that will represent groups of events that typically occur together. While previous authors have used event type as a means for conceptually categorizing traumatic experiences (Carlson et al., 2001; Kessler & Kendler, 1997; Mullen et al., 1996; Pelcovitz et al., 1997), none of these authors used empirical methods, such as factor analysis, to examine the ways that these events cluster naturally. Thus, the lack of specificity in the relationships found between particular types of exposure and resulting types of dysfunction may have been due, in part, to theoretical, rather than statistical, grouping of the exposure items into categories by event type.

Similarly, to measure trauma symptomatology from such a framework, it also makes sense to evaluate a variety of psychological domains. One measure that does so is the Trauma Symptom Checklist for Children (TSC-C; Briere, 1996), which gathers self-reported levels of psychological symptomatology across several categories (i.e., anxiety, depression, anger, posttraumatic stress, dissociation, and sexual concerns). However, other post-traumatic symptoms have been identified as well, such as difficulties with affect regulation (Schore, 2001), self-concept (Schneider-Rosen & Cicchetti, 1991), and existential meaning (Janoff-Bulman & McPherson-Frantz, 1997). With this breadth of impact of traumatic exposure in mind, Pelcovitz and colleagues developed the Structured Interview for Disorders of Extreme Stress (SIDES; Pelcovitz et al., 1997), a measure tapping alterations in seven functional domains not addressed by previous measures of posttraumatic stress symptomatology (i.e., Alterations in Affect Regulation, Alterations in Self-perception, Alterations in Systems of Meaning, Alterations in Attention or Consciousness, Alterations in Perception of the Perpetrator, Alterations in Relations with Others, and Somatization). As described above, these authors found that their identified outcome domains were differentially predicted by different types of traumatic exposure. An adolescent version of the SIDES has also been developed (SIDES-A; Pelcovitz, 2005), which is similar in domain structure to the original SIDES. Taken together, the TSC-C and SIDES-A provide access to a wide range of symptomatology consistent with the framework of complex trauma.

Exposure Types and Resulting Psychological Distress

Each of the three broad types of trauma and stress exposure (Interpersonal, Community Violence, and Loss) identified above by Jurkovic et al. (manuscript in

progress) have been predictive to some extent of certain forms of psychological dysfunction in previous research with adolescent youths. However, there are few consistent findings when examining specific relationships. Taking the construct of traumatic loss as an example, Kessler and Kendler (1997) examined the relationship between a large range of childhood adversities and mood, anxiety, and addictive disorders in adulthood. They determined that loss events (such as parental death or divorce) better predicted mood disorders than anxiety disorders. However, these loss events were more predictive of mania and dysthymia than depression. This was counter to research that has associated loss and depression (Zvizdic & Butollo, 2001), but consistent with other findings that there may not be a direct relationship between the two (Kendler, Sheth, & Gardner, 2002). Further, Kessler and Kendler (1997) concluded that, after controlling for comorbidity, different types of adversities (such as loss, parental psychopathology, and interpersonal traumas) were more similar than different in their prediction of different DSM diagnoses. While they acknowledged that some individual events were more highly predictive of psychopathology than others within a given event cluster (e.g., parental breakup/divorce was the strongest predictor within the "loss" category), these events were not effective in differentially predicting specific disorders.

Other research has drawn similar conclusions (Mullen et al., 1996). For example, Franko et al. (2004) identified a relationship between interpersonal loss at time 1 (age 16) and depressive symptoms at time 2 (age 18) in an ethnically and socioeconomically diverse sample of adolescent girls. However, these loss experiences did not predict depressive symptoms three years later (age 21); instead, time 1 interpersonal trauma became the only significant predictor of depressive symptoms at time 3. In another

recent study surveying a nationally representative sample of over 4,000 adolescents, Rheingold, Smith, Ruggiero, Saunders, Kilpatrick, and Resnick (2004) found no relationship between the death of a family member and PTSD (past 6 months), Major Depressive Episode (MDE; past 6 months), or Substance Abuse/Dependence (SA/D; past year) diagnoses. That same study found a bivariate relationship between death of a close friend over the past year and all three outcome variables (PTSD, MDE, SA/D). However, death of a friend was only predictive of SA/D diagnoses after controlling for other types of trauma exposure and demographic variables. Taken together, these studies suggest that there is likely some relationship between traumatic loss and negative psychological outcomes. However, this relationship is not robust, nor does traumatic loss consistently predict depression and other mood disorders.

Community violence exposure has also been consistently shown to predict poor psychological outcomes in adolescents, but research is somewhat inconsistent in associating it with specific types of distress. For example, Paxton, Robinson, Shah, and Schoeny (2004) found direct relationships between community violence exposure and both depression and PTSD symptoms in a sample of low-income African-American adolescent males. Other studies have associated community violence with anxiety and depressive symptoms (Ball et al., 2006; Kliewer, Lepore, Oskin, & Johnson, 1998). Additionally, Foster, Kuperminc, and Price (2004) found effects of both community violence witnessing and victimization on a range of psychological outcome variables, such as anxiety, depression, anger, posttraumatic stress, and dissociation in a sample of high-risk adolescents. They also found that both types of community violence predicted levels of anger and dissociation more strongly in regression analyses relative to other

outcomes. Despite this support, however, other studies have found conflicting results. Farrell and Bruce (1997) found a relationship between community violence exposure and frequency of violent behavior, but not with measures of anxiety/depression. Other researchers have found similar results, with violence exposure accounting for substantially more variance in certain behaviors, such as antisocial and aggressive activities, than psychological distress symptoms such as depression and anxiety (Schwab-Stone et al., 1995). More recently, longitudinal research has found a significant relationship between witnessing violence, and subsequent levels of hopelessness, in a sample of poor urban males and females (Bolland, Lian, & Formichella, 2005).

Finally, many studies have found a relationship between interpersonal trauma exposure (such as intrafamilial physical abuse, sexual abuse, and neglect) and specific psychological outcomes in adolescents. For example, Pelcovitz, Kaplan, DeRosa, Mandel, and Salzinger (2000) found a relationship between exposure to family physical violence and symptoms of depression, anxiety, and PTSD. Several other authors have found consistent relationships between childhood physical, sexual, and/or emotional abuse and a variety of psychological outcomes, such as anxiety, depression, PTS symptomatology, and substance abuse problems (Briere and Runtz, 1988; Kendall-Tackett, Williams, & Finkelhor, 1993; Kessler and Kendler, 1997; McClellan, Adams, Douglas, McCurry, & Storck, 1995). Finally, recent research has also identified a relationship between sexual abuse and depressive symptoms among incarcerated adolescent males and females (Gover, 2004).

In sum, different types of trauma exposure are related to different types of resulting psychological distress in adolescents. Traumatic loss is generally associated

with depressive and other mood symptoms, but this result is not consistent across all studies and is dependent upon type of loss. Community violence is associated with several functional domains, such as depression, anxiety, PTSD, anger, and dissociative symptoms. However, it is generally more highly associated with anger and dissociation than with mood symptoms, such as depression or anxiety. Finally, interpersonal trauma has been associated consistently with a range of symptoms, but especially depression, anxiety, PTS, and substance abuse symptoms. It is again noteworthy, however, that very few of these studies have examined the differential predictive ability of various types of childhood trauma/stress exposure on outcomes in the same sample (see Carlson et al., 2001, for an example), and virtually none have done so in sample of incarcerated adolescents.

Summary of Research and Purpose of the Current Study

In summary, research has successfully identified relationships between childhood and adolescent traumatic and stressful events and an array of later psychosocial functioning across the lifespan. Further, individual studies have found specific relationships between individual events and specific psychosocial outcomes, and this has been done to some extent with high-risk youths, including incarcerated adolescents. However, at least three major gaps remain. First, little research has been done explicitly testing whether traumatic events and less severe, negative life stressors are better discussed as separately occurring versus co-occurring events in any adolescent populations. And, if the latter conceptualization is more accurate, it is important to identify the ways that negative life events do, indeed, group together in marginalized adolescent populations. These are questions that Confirmatory Factor Analysis (CFA) is

well-suited to address through comparison of the factor structure of competing models of the same data, even though Structural Equation Modeling (of which CFA is a special case) has frequently been underutilized for this purpose (Breckler, 1990).

Second, research has failed to question why we have thus far been unable to predict certain psychological trajectories based on different groups of traumatic/stressful events. Specifically, no one has examined whether statistical development of categories of exposure through factor analytic and/or structural equation modeling techniques may provide more accurate, differential prediction of psychological outcomes. Finally, little to no research has attempted to use an established theoretical construct (complex trauma) as a framework for attempting to conceptualize the histories and psychological trajectories of incarcerated juvenile offenders. To this end and based on the literature cited above, the following hypotheses are proposed:

Specific Hypotheses

(1) It is hypothesized that the factor structure generated by Jurkovic et al. (manuscript in progress) will be confirmed using items from the ASTEQ-2, a revised version of the original exposure measure (ASTEQ) used in that study. Additionally, it is hypothesized that Confirmatory Factor Analysis will show this 3-factor model (Interpersonal exposure, Community Violence exposure, and Loss exposure) to fit the data better than an alternative 2-factor model (Trauma exposure and Negative Life Stress Exposure) using the same data.

(2) It is hypothesized that the Interpersonal exposure subscale will positively predict current levels of self-reported depression, anxiety, PTS symptomatology, and

dissociation, over and above the variance accounted for by demographic control variables and the Community Violence and Loss subscales of the ASTEQ-2.

(3) It is hypothesized that the Community Violence exposure factor will positively predict current levels of self-reported PTS symptomatology, anger, and dissociation, over and above the variance accounted for by demographic variables variables and the Interpersonal and Loss subscales of the ASTEQ-2 .

(4) It is hypothesized that the Loss exposure factor will positively predict current levels of depression and anxiety, over and above the variance accounted for by demographic control variables and the Interpersonal and Community Violence subscales of the ASTEQ-2.

Exploratory analyses

(5) Given the prior research cited above suggesting a consistent relationship between interpersonal trauma exposure and outcomes for the adult version of the SIDES (Pelcovitz, 1997), a positive relationship is hypothesized between the Interpersonal exposure subscale of the ASTEQ-2 and the three SIDES-A outcomes, over and above all other demographic variables and ASTEQ-2 factors.

(6) Considering the association in the literature between community violence exposure and externalizing symptoms, such as anger and delinquency, a positive relationship is also predicted between the Community Violence subscale and the Self-Destructive SIDES-A outcome, over and above all other demographic variables and ASTEQ-2 factors.

(7) Finally, given recent research associating community violence and levels of hopelessness in a similar population, a positive relationship is hypothesized between

the Community Violence subscale and the Sustaining Beliefs subscale of the SIDES-A, over and above all other demographic variables and ASTEQ-2 factors.

CHAPTER 3

Methods

Power Analysis for Regression Analyses

At an alpha level of .05, assuming one covariate accounting for 3% of the variance in the outcome in step 1 and the predictor accounting for 5% of the variance in the outcome step 2, 200 subjects are required to achieve a 90% probability for identifying a true effect (see Bakeman & McArthur, 1999).

Participants

One hundred and ninety incarcerated male and female adolescent juvenile offenders, incarcerated in a state in the southeast United States, participated in the current study. Five cases were not included due to missing or invalid data. The final sample was comprised of 185 youth participants. Youths were interviewed between August 2005 and March 2006 and were in the custody of the state's Department of Juvenile Justice at the time of data collection. Four juvenile detention facilities were used as sites for data collection. Two of these sites were Regional Youth Detention Facilities (RYDCs), used primarily as initial holding facilities while the youths await adjudication or an alternative placement. Approximately 20% of the youths in the current study were located at one of the two RYDCs at the time of data collection. The remaining 80% of youths were located at one of two Youth Development Campuses (YDCs), which serve as long-term placements for youths adjudicated with sentences ranging from 3 months to 5 years.

Ninety-six males (52%) and 89 females (48%) participated in the current study. Seventy-seven percent of the sample was comprised of youths of color, 65% of whom

identified themselves as African-American. Youths ranged in age from 12 to 19, with an average age of 16. Table 1 provides a detailed breakdown of sample demographics. Further analyses were conducted to determine whether youths' age or mother's level of education varied by gender or ethnicity. Results showed that youths did not differ by Age across the variables of Gender, Ethnicity, or Mother's Level of Education. A strong effect, however, was found for Ethnicity predicting Mother's Level of Education, $\chi^2(12)= 37.4$, $p<.001$. However, several cells had counts less than 5 due to the low number of Latino and "Other" categories. To minimize this problem and improve interpretability, the test was re-run examining only African-American and Caucasian youths. The Chi-square test was again significant with the reduced N of 162, $\chi^2(4)= 25.2$, $p<.001$. Further examination of the pattern of data suggested that nearly equal proportions of African-American and Caucasian youths reported that they either "Don't Know" their mother's highest level of education achieved, or that their mothers had attended "At least some college." However, African-American youths reported higher rates of graduation from high school for their mothers than did Caucasian youths.

Youths were chosen through a convenience sampling procedure. Additionally, participation was voluntary in the current study, and, therefore, youths were given the opportunity to decline to participate. Several other criteria were also used to exclude certain youths from participation. Specifically, youths were not eligible for the study if (1) they had been assessed by a previous mental health professional as having intelligence quotients less than 70, thus suggesting significant cognitive deficits and a potential classification of Mental Retardation; (2) if they were demonstrating active psychotic features as assessed by detention facility mental health staff at the time of data

Table 1

Sample Demographics (N=185)[a]

Construct	Frequency	Percentage
Age		
12	3	1.6
13	5	2.7
14	13	7.0
15	32	17.3
16	72	38.9
17	38	20.5
18	17	9.2
19	5	2.7
Gender		
Male	96	51.9
Female	89	48.1
Ethnicity		
African-American	120	64.9
Caucasian	42	22.7
Latino	8	4.3
Multi-ethnic	13	7.0
Asian	1	0.5
Other	1	0.5
Mother Educational Level		
Less than High School	27	13.5
GED	13	7.0
High School Diploma	62	33.5
Some/All College	58	31.4
Don't Know	25	13.5

[a]All measures assessed by adolescent self-report

collection; or (3) if they were demonstrating behavioral difficulties that made it inappropriate for them to participate in the study at the time of data collection as assessed by either mental health or security staff at the facility.

Across all sites, 4 youths refused to participate after being solicited by a research assistant. Prior to meeting with the research team, two youths were deemed ineligible due to cognitive deficits, and 15 youths were deemed ineligible due to behavioral problems. In addition, a total of approximately 30 youths at the female YDC were ineligible for potential participation in the study due to being housed in a more restricted unit for youths having behavioral difficulties, to whom researchers were not allowed access.

Measures

Demographic Information. Relevant demographic information, including age, current or estimated grade level, ethnicity, current relationship to guardians lived with prior to incarceration, and estimates of Socio-Economic Status (SES) based on highest levels of education achieved by each youth's biological parents were gathered through youth self-report.

Adolescent Stress and Trauma Exposure Questionnaire – Version 2 (ASTEQ-2 ; Jurkovic et al., manuscript in progress). The ASTEQ-2 is the second iteration of a new measure developed specifically for adolescents at high risk for negative psychosocial outcomes, assessing their lifetime history of exposure to a wide range of potentially traumatic and stressful experiences. The prior version of the measure, the Youth Trauma and Stress Screening Inventory (YTSSI; Ball et al., 2006) was used successfully in previous research and predictive validity was established with a variety of psychosocial

outcomes in this population (see Ball et al., 2006, for a more detailed discussion). Stakeholders from a variety of areas contributed to the development of both versions of the measure, including clinicians and researchers that specialize in the mental health care issues most relevant to this population, such as adolescence, trauma, juvenile justice, and multicultural issues. In addition, feedback on the structure and content of the measure was solicited from administrators, clinicians, and other professionals working in mental health treatment for youths at risk for and/or experiencing negative psychosocial outcomes. This feedback was gathered during initial development of the YTSSI, as well as after the initial round of data collection, and included many direct care staff working in prior data collection sites. Additionally, youths' responses drove a variety of grammatical changes in the ASTEQ-2, and in some cases, individual youths' feedback about the measure itself and stressful experiences that were not addressed led to the development of new items for the second version.

The result of this process to date is the ASTEQ-2, a 63-item, self-report measure. This measure includes items that meet DSM-IV criteria as potentially traumatizing events, (e.g. "Have you ever been knifed, shot, or shot at;" "Have you ever seen people in your family beat each other up?"), as well as items that are likely subthreshold for acute trauma but also still highly likely to be stressful in nature (e.g. "Have people in your family gotten drunk or out of control from using alcohol or drugs;" "Have you ever been left out of things by other kids?"). In addition to these binary items, it is noteworthy that the ASTEQ-2 also gathered a range of other information, such as which 5 events were the "worst" for them, the emotional impact of these experiences, whether completing the questionnaire elicited various stressful emotions or possibly made them feel better, and

ways that they have changed in a positive way through their traumatic and stressful experiences. It is also of note that only a subset of the 63 items comprised the Interpersonal, Community Violence, and Loss subscales used in the current study. The scale development process is discussed in more detail below.

The ASTEQ-2 utilizes a card-sort approach for a portion of its methodology. This is done primarily to allow the youths to have the opportunity to answer nonverbally to each item, with the goal of increasing the validity of responses that may be difficult to admit verbally to the interviewer. Specifically, each of the 63 exposure items is listed on separate cards. The youth reads each card and sorts them into two piles: "Yes, this has happened to me," and "No, this has not happened to me." After answering all 63 items, the youth is then asked to sort through the "yes" pile, and pull out the five "worst" items. Various follow-up questions (which are not being included in the current study's analyses) are then asked only about these five items.

Trauma Symptom Checklist for Children (TSC-C; Briere, 1996). This is a 52 item, self-report measure designed to evaluate post-traumatic stress symptomatology in youth. The measure consists of 2 validity scales (Underreporting and Overreporting) and 6 clinical subscales: Depression, Anxiety, Sexual Concerns, Post-traumatic Stress, Anger, and Dissociation. These subscales are theoretically derived from a complex-trauma framework. This measure has shown adequate internal consistency and validity across a range of youth populations (Briere, 1996; Sadowski & Friedrich, 2000). It is important to note that this measure has been normed only on youth up to the age of 16. However, the measure has been used with 17 year-old youth successfully (Briere, 1996). The main concern with using this measure for older adolescents has been that the

wording of the items was too elementary for them. However, the overall educational level of incarcerated adolescents is generally estimated in the fifth to ninth grade range (Foley, 2001), suggesting that using a scale with more basic wording could actually be more appropriate than using a scale normed on "average" adults, such as Briere's Trauma Symptom Inventory (Briere, 1996). Thus, the TSC-C was used with all youths regardless of age.[1]

Structured Interview for Disorders of Extreme Stress – Adolescent Version (SIDES-A; Pelcovitz, 2004). The SIDES-A is a structured interview designed specifically for adolescents that have likely been exposed to extreme levels of trauma, consisting of 63 items related to six subscales designed to assess for alterations in the following areas as a result of trauma: (1) affect regulation; (2) attention or consciousness; (3) self-perception; (4) relations with others; (5) somatization; and (6) systems of meaning. The SIDES-A is currently in draft form and based on the original SIDES adult version (Pelcovitz et al., 1997). Each of the 63 items is scored based on both lifetime occurrence and current level of distress for that symptom; current level of distress is rated on a 0 to 3 scale. The SIDES-A was developed theoretically based on the construct of complex trauma as described above. However, it is in draft form and thus has no current norms and has not been empirically validated. Additionally, several of the subscales overlap substantially with the TSC-C, a well-validated measure of diverse posttraumatic stress symptomatology. Only three subscales of the SIDES-A were selected that (a) tap unique

[1] *Procedural Note:* Within the first two days of data collection, research assistants (RAs) conducting data collection sessions with individual youths began to express concerns with regard to administration of the TSC-C Sexual Concerns subscale. Specifically, they reported emotional discomfort and associated reduction in rapport as a result of asking youths questions pertaining directly to youths' sexual distress. The discomfort was reported for both RAs and the youths, and even more heightened when the RA-participant dyads were of mixed gender. As a result, a decision was made to drop the TSC-C Sexual

constructs of complex trauma not addressed by the TSC-C, and (b) would likely be particularly relevant to incarcerated youths' life experience from their perspective: Self-Destructive Behavior (4 items; e.g., "Has there ever been a time when you knew something was dangerous or risky, but did it anyway?"); Inability to Trust (5 items; e.g., "Has there ever been a time when you had trouble trusting people," "Has there ever been a time when being comforted made you uncomfortable?"), and Sustaining Beliefs (3 items, e.g., "Has there ever been a time when you thought there was no fairness or justice in the world?"). As a structured interview, anchors are given on the measure for each rating choice, but the interviewer has substantial flexibility to discuss each question openly, and in a way that the youth and the interviewer work collaboratively to determine the best score for each question (see Pelcovitz, 2004, for a full description of the interview structure).

A final note is that, while the scale was originally designed to ask youths about particular experiences since the time that they were exposed to a severe traumatic event, this approach would likely have been untenable for this population given (a) the probably complexity of this population of youths' traumatic histories, and (b) the implied requirement that the youths have sufficient cognitive and emotional resources to report on the development of subjective experiences mapped over an internal timeline of traumatic and stressful events. As such, all questions were framed as referring to experiences they may have had anytime throughout their lives with no reference to particular traumatic or stressful events.

Concerns subscale from the list of outcome measures. It is for this reason that no results were reported for this outcome in the current study.

Data Collection Procedure

Training of research assistants, participant compensation, and attempts to reduce exploitation. Given the vulnerability of the population being evaluated, as well as concerns with regard to validity of reporting, all data were collected from each youth individually, through one-on-one data collection sessions, with a trained research assistant (RA). A total of 23 RAs (including the author) were trained and participated in data collection. Data collection sessions were conducted in a private room whenever possible; this situation was achieved in the vast majority of cases. In a small percentage of cases, it was necessary to conduct the interviews in a large area, such as the facility's cafeteria. In these situations, care was taken to ensure that the spacing between RA-participant dyads was large enough such that each dyad was outside of reasonable earshot of all other dyads.

All RAs received a one-hour training by the author of the current study before participating in the data collection process. The training addressed how to present a clear explanation of the study, read and summarize the assent form accurately, and to develop rapport with the youth in order to reduce the defensiveness inherent in the power differential between researchers and vulnerable participants, including verbal (e.g. tone, appropriateness of supportive remarks), as well as nonverbal (e.g. eye contact, seating arrangement, respect for personal space, nonjudgmental and objective approach to gathering information) considerations. Additionally, the training addressed measure administration and noted places in the data collection process that may be of particular concern with regard to reliability. This was of particular importance given that the RAs

read each item verbally, in addition to each item being presented in written form to the youths.

One concern with youths who have experienced significant traumatic exposure is the tendency to underreport the resulting psychological distress that accompanies it, and has been discussed by Briere specifically as it pertains to reporting on the TSC-C (Briere & Elliott, 1997; Elliott & Briere, 1994). In an attempt to minimize this tendency, extra measures were taken to ensure that each youth's assent was as fully informed as possible, with the goal of reducing potential defensiveness due to situational factors. For example, the RAs were trained to frame the compensation as payment for the youths' willingness to do their best to report accurately on their own past experiences and current levels of distress. RAs were also trained to verbally emphasize the portion of the assent form noting that their answers would not affect their stay nor their treatment in the YDC, that they would not be required to answer any question that they did not want to answer, and that their answers could not be tied to their names following the research session.

Safeguards. Given the sensitive nature of the information collected and the psychological vulnerability of the population, a variety of safeguards were put in place to ensure the psychological protection of the youths who chose to participate. An on-site, licensed, DJJ-employed mental health clinician was on call at all times to the study while data collection sessions were being conducted, and each facility assigned at least one security staff member to the area where data collection was being conducted, in order to increase the safety of RAs as they conducted interviews, and facilitate the contact of the mental health clinician on call, if necessary. Additionally, all RAs were trained how to facilitate contact of the on-call psychologist should a mental health issue arise. Finally,

after the completion of the data collection session, each RA completed a referral form that was submitted to the on-call mental health clinician at the end of every day of data collection. Because several of the questions asked the youths to address information that must be reported to relevant authorities if endorsed (such as history of physical abuse and suicidal ideation), the referral form was the official process through which the RAs reported this information to the detention facility. In addition to the information required by law, the form also allowed the RA to report other comments or behaviors that made him or her concerned for the psychological well-being of the youth, and also to report (based on a youth's explicit request only) that a youth would like to be seen for further psychological evaluation/treatment by the facility's mental health team.

A total of 3 youths (2 females, 1 male) stopped the data collection session without finishing. In two of the cases, the youths became notably upset and asked to cease the session. In the third case, the youth demonstrated no behavioral indication of distress, but asked to stop for unknown reasons. In all 3 cases, the safeguards that had been established for the psychological well-being of each youth were implemented effectively, and no adverse events followed.

Participant Compensation. Youth compensation for the study varied according to requirements set forth by the staff for each detention facility. Care was taken to provide compensation that adequately reimbursed the youths' time, was relevant and desirable, but yet did not overly coerce them into participation given their status as potentially vulnerable participants. For both RYDCs and the male YDC facility, youths were offered a variety of snacks as a reward for participation, such as juice boxes, candy, chips, and snack cakes. Youths either consumed the snacks in the data collection area, or

brought them back to their housing units, depending on a variety of facility and situation-specific factors. Additionally, for the male YDC facility, youths were generally brought to the data collection area in larger groups. During these times a range of magazines were available for them to read, such as Sports Illustrated, Vibe, and Road and Track before being returned to their units. At the female YDC facility, facility restrictions required that no immediate compensation be provided on the day of participation. However, all participating youths were promised (and given) a pizza party at the end of the data collection period, during which pizza and soft drinks were served in their cafeteria. In addition, a variety of similar magazines were donated to the youths' detention center library. Youths were clearly told about the specific types of compensation available to them at each facility during the process of obtaining assent.

Data Collection. All data were collected through individual sessions with a trained RA. All questions were read aloud to all youths, regardless of reading ability, at the same time that youths were encouraged to read along. However, in a few isolated cases, youths requested to read the items silently, and this request was respected.

Because these youths were in the custody of the state's Department of Juvenile Justice (DJJ), informed consent for each youth was obtained from an authorized representative of the youths in DJJ prior to data collection. Youths were chosen through convenience sampling. Youths were brought by security staff to a central area in the detention facility being used for data collection purposes, either individually or as a group. In all cases, youths were given an informal explanation at this point about the purpose of the study by one or more RAs, even before the formal process of gaining the youth's consent to participate. In many situations, this informal introduction was done

with the youths as a group; at other times, however, it was necessary for RA-participant dyads to be created immediately after the youths arrived at the central designated area, in which case this informal introduction process was also conducted individually. After this initial introduction to the study, youths were asked if they would like to participate. Youths that agreed were then matched with an RA (if this initial introduction was done as a group) and went to the private rooms or areas designated for data collection. Youths that declined were returned to their housing units immediately.

Once alone with the matched RA, the RA read and summarized the assent form with the potential participant, and all youths were given another opportunity to decline to participate in the study. After the assent form was signed and collected, data collection began. The measures were administered in the following order: Demographic data sheet; TSC-C; SIDES-A subscales; and the ASTEQ-2. Near the end of each individual data collection session, the RA asked the youth about the emotional impact of reporting on their past experiences, as well as whether completing the questionnaire made them feel better (Part 3 of the ASTEQ-2). Finally, the youth was asked a series of open-ended questions (Part 4 of the ASTEQ-2) in order to help the youth leave the data collection process in a positive frame of mind, such as "Based on what has helped you to deal with stress, what would you tell other kids to do?" and "What beliefs, thoughts, or ideas have helped you with stress?" The questions were framed in the context in which the study was presented – as a way to gather information on the effects of stress on adolescents, and to help other youths in similar situations to learn how to deal with stress. The RAs were trained in how to facilitate a positive response from the youth. After answering these final questions, each youth was given the opportunity to ask any questions they had

about the study or the data collection process, and allowed to return to the central data collection area to receive their compensation. On average, the total data collection session took approximately 45-60 minutes to complete.

CHAPTER 4

Results

Data Analytic Procedure for Confirmation of ASTEQ Factor Structure

Step 1: Creating ASTEQ-2 factors. Prior to the current study, the ASTEQ-2 was modified from its original version by retaining, dropping, and amending items from the original version of the measure, as well as by adding new exploratory items, after the collection of the initial data set upon which the above-described EFA (Jurkovic et al., manuscript in progress) was conducted. In order to maintain as much consistency as possible in the items comprising each factor, several criteria were used to select items for the CFA. Specifically, an item was included if it was a retained, identical or conceptually equivalent but amended item from the original version of the measure, and the item's promax-rotated factor loading was above .3 on one of the three EFA factors in the original sample. No conceptually new items added to ASTEQ-2 were included in CFA analyses for the current study. These inclusion and exclusion criteria from the EFA resulted in a total of 28 manifest, binary variables for CFA, with eight, fourteen, and six items loading on the Community Violence, Interpersonal, and Loss factors, respectively. Table 5 lists each of the 28 items, and depicts the factors upon which each item was forced to load for the two alternative CFA models tested.

Step 2: CFA Procedure. In order to evaluate the factor structure of the ASTEQ-2 and compare the competing models described above, two Confirmatory Factor Analyses (CFA) were conducted. One of the most salient assumptions of Structural Equation Modeling (SEM; Kline, 1998), of which CFA is a special case, is that the individual

items have an underlying normal distribution of scores (Kline, 1998; Woods, 2002). However, the individual item scores on the ASTEQ-2 are binary in nature (yes/no responses regarding exposure to certain events), and binary data do not meet this assumption (Cohen and Cohen, 1983). Further, SEM factors are generally extracted from a matrix of bivariate correlation or covariance matrices between all items included in the model (Kline, 1998). However, when analyzing ordinal or binary data, the resulting bivariate correlations (or Phi Coefficients) underestimate the strength of the relationship between the two variables as compared to the same, normally-distributed construct measured on a continuous scale (Cohen and Cohen, 1983; Joreskog, 1994; Wang and Cunningham, 2005; Woods, 2002). As a result, factor loadings tend to be underestimated as well, and the number of identified factors tends to be overestimated when many of the items exhibit extreme yes/no proportions (Parry and McArdle, 1991; Woods, 2002). While some authors have argued that using phi coefficients as a basis for factor analysis does not have meaningful negative consequences (Parry and McArdle, 1991), many other authors disagree on both empirical and statistically theoretical grounds (Joreskog, 2002; Wang & Cunningham, 2005; Woods, 2002).

Instead, these authors suggest calculating tetrachoric correlation coefficients, which are estimates of the relationship between the underlying constructs of each variable, if the researcher has reason to believe that the constructs being measured are actually continuous and normally distributed in the population (Cohen & Cohen, 1983; Joreskog & Sorbom, 1988, 1993). These coefficients are estimates based on the probability response distributions for each variable, and simply a special case of the

polychoric correlation coefficient, which is an alternative approach to estimating the relationship between ordinal variables (Joreskog, 1990; Joreskog, 2002).

Additionally, a variety of researchers have empirically demonstrated that certain extraction methods are much better suited than the often-used maximum likelihood discrepancy function for analysis of factor matrices based on polychoric correlation coefficients, such as Weighted Least Squares (WLS), Diagonally-Weighted Least Squares (DWLS), and Unweighted Least Squares (ULS; Joreskog, 1990, 2002; Maydeu-Olivares, 2001; Moustaki, Joreskog, & Mavridis, 2004; Rodebaugh et al., 2004; Wang & Cunningham, 2005; Woods, 2002). These authors generally agree that WLS is the most robust estimator for dichotomous and polytomous data under ideal circumstances. However, it has also been shown to be dramatically more complicated computationally. As a result, it has been found to perform well only at very large sample sizes (i.e. samples of at least several hundred or even larger; Hu & Bentler, 1992; Maydeu-Olivares, 2001) and is considered impractical for most data sets as a result.

In contrast, DWLS and ULS approaches have been shown to perform well at sample sizes as low as N=100, and statistical differences between them have been extremely low in studies directly comparing the two extraction methods (Schumaker and Beyerlein, 2000; Wang & Cunningham, 2005; Maydeu-Olivares, 2001). DWLS has been shown to be a statistical compromise between ULS and WLS (Joreskog, 1990), and is thus more theoretically defensible.

While many researchers note the advantages of these more statistically sound approaches over traditional factor analytic methods for binary data (Maydeu-Olivares, 2001; Moustaki, Joreskog, & Mavridis, 2004; Rodebaugh et al., 2004; Woods, 2002), the

few studies that have factor analyzed traumatic events on a binary scale almost always rely on these inappropriate methods (see Jeon et al., 2005, as an example). Because differences between DWLS and ULS have been shown to be small, and DWLS has been shown to be a more theoretically defensible approach to estimation of binary data, DWLS was used in the current study to estimate the factor structure of a covariance matrix of tetrachoric correlations, using the PRELIS and LISREL programs (Joreskog, 2004).

Step 3: Evaluation of Model Fit. An important component of CFA model evaluation is the assessment of model fit through the use of various "goodness-of-fit" statistics. Many books and articles addressing the evaluation of model fit have historically used universally-applied cutoff criteria for nearly all types of fit statistics, including goodness-of- fit indices, complexity-adjusted fit indexes, various Chi-Square difference tests, and standard error estimates (see Kline, 1998, for a succinct summary of these statistics and the use of conventional cutoff criteria). However, a few researchers have now begun to examine how well these various tests (and their associated "rule of thumb" cutoff criteria) balance Type I and Type II error across different sample sizes, model complexity, extraction methods, and other factors (Hu & Bentler, 1998; Hu & Bentler, 1999; Marsh, Balla, & McDonald, 1988; Marsh, Hau, & Wen, 2004). In general, there is continuing theoretical and empirical debate about the circumstances under which certain statistics and cutoff criteria are appropriate, and some authors have even explored the extent to which traditional cutoff values have, over the years, been interpreted more leniently, and more universally, than originally intended (Lance, Butts, & Michels, 2006). Still, certain new developments with regard to cutoff criteria in SEM procedures are

particularly relevant to the decision-making process about which statistics and cutoff criteria likely should and should not be used in the current study.

First, certain statistics appear to be less affected by sample size than others, which is of particular importance when the sample sizes are relatively large, or relatively small (as in the current study's sample of 185). While almost always reported as a measure of model fit, the overall Goodness-of-Fit χ^2 statistic is highly dependent upon sample size, and is almost always found to be statistically significant at even relatively low sample sizes (Joreskog, 1993; Kline, 1998). As such, many authors suggest using χ^2/df as a way to mitigate its sensitivity to sample size. Still, Kline (1998) notes that, while a χ^2/df value <3 is generally considered acceptable, a value of 2.5 or less may still arise in poor-fitting models with small sample sizes. Similarly, two incremental fit indices that appear the least affected by sample size across various simulation studies are the Comparative Fit Index (Bentler, 1990) and the Tucker Lewis Index (NNFI; Tucker & Lewis, 1973; Hu & Bentler, 1998; Marsh et al, 1988).

More recently, authors have begun taking the advice of Hu and Bentler (1999), who suggest that overall cutoff criteria for these overall fit indices should be made more stringent from .9 to .95 or greater (see Kuperminc & Allen, 2001; Russell, 2002). Hu and Bentler (1999) also recommend that the Standardized Root-Mean Residual statistic (SRMR; Bentler, 1995), one approach to measuring of the size of the model error terms, be used with small sample sizes in combination with other indices. With regard to this point, however, others have concluded that SRMR tends to over-reject imperfect but acceptable models (Marsh et al, 2004), particularly at low sample sizes (150-250), and is especially variable based on sample size more generally. By comparison, Marsh et al.

(2004) found that RMSEA provided a more reasonable Type I error rate (in CFA, the rate of false rejection of acceptable models) as an estimator of measurement error terms less affected by sample size.

As a framework for choosing a set of fit statistics, Kline (1998) recommends that a minimum set of statistics would include a significance test of the appropriate χ^2 statistic (such as the basic χ^2 statistic and/or χ^2 / df); an overall measure of incremental model fit (such as the CFI); a model fit index that is adjusted for model complexity (such as NNFI); and an index measuring the average size of error terms. In the current study, the Sattora-Bentler χ^2 will be used, which has been shown to be the most appropriate χ^2 statistic to use when analyzing non-normal data (Hu, Bentler, & Kano, 1992), and is the default χ^2 statistic employed by LISREL 8.7 for analysis of binary or ordinal data using the DWLS extraction method (Joreskog, 2004). Applying this framework to the research cited above, the current study utilized χ^2, χ^2/df, CFI, NNFI, and RMSEA as measures of model fit. Cutoff criteria for model evaluation were set as follows: χ^2 = null-hypothesis significance test at an alpha of .05; χ^2/df value less than 2.5 (as advised by Kline, 1998); CFI and NNFI values greater than .95 (as advised by Hu & Bentler, 1999); and RMSEA less than .05 (as advised by Browne & Cudeck, 1993).

Data Analytic Procedure for Differential Prediction of Outcomes by ASTEQ-2 factors

Step 1: Assessing the Potential Effect of Demographic x Predictor Interactions on TSC-C and SIDES-A Outcomes. While any main effects for the four demographic variables of interest (Age, Gender, Ethnicity, and Mom's Level of Education) were controlled for in all final hierarchical regression models comparing the three ASTEQ-2 factors simultaneously, it was also necessary to determine the extent to which these

variables may have interacted with the individual ASTEQ-2 exposure subscales predictor variables to account for significant portions of variance in each of the eight DVs. To test for these effects, a series of simultaneous regressions were conducted. Each regression included only one step, in which one of the four demographic variables (centered Age, Gender, centered Mom's Level of Education, and Ethnicity), centered versions of one of the three ASTEQ-2 factors (Community Violence, Interpersonal Stress, and Loss), and their interaction term, were entered simultaneously. This process was repeated for each of the 8 DVs. Because the 5 TSC-C subscales are already normed by age and gender, however, regressions were not conducted to test the moderating effects of age and gender for these 5 outcomes. As such a total of 66 regression analyses were conducted to test these potential moderation effects. It is of note that, because of the low cell counts for Ethnic categories other than Caucasian and African-American, however, interpretability of any moderation effects including those ethnicities would have been potentially misrepresentative. For this reason, any final model regression analyses involving significant interaction effects with Ethnicity were conducted only comparing African-American and Caucasian categories.

Step 2: Predicting Outcomes by ASTEQ-2 Factors. First, a series of separate hierarchical regressions was conducted to test the effect of the individual ASTEQ-2 factors on each of the 8 outcomes, over and above any effects of the demographic variables. This series of regressions served two goals: first, it established predictive and convergent validity for the individual ASTEQ-2 factors. Second, it established an independent baseline relationship between individual ASTEQ-2 factors and the outcome variables for comparative purposes once those subscales are entered into the final,

competing regression equation. A total of 24 (3 IVs x 8 DVs) hierarchical regression equations were conducted for this purpose. Relevant demographic variables were entered simultaneously in Step 1, and each IV was entered independently in Step 2. Again, the variables Age and Gender were not explicitly controlled for in regression equations predicting TSC-C outcomes, given that the values are T-scores based on Age and Gender norms.

Second, a series of eight hierarchical regressions were conducted to test the *unique* associations between the three ASTEQ-2 factors and the eight psychological outcomes. Relevant demographic variables were entered simultaneously in Step 1, and the three ASTEQ-2 factors were entered simultaneously in Step 2. If necessary, interaction terms were entered in Step 3 that were found to be significant through the process described above. In these regression analyses, centered versions of continuous variables that comprised the interaction term were used.

Descriptive Statistics

Descriptive statistics were run on all variables in the analysis (N=185) in order to examine the distributions for outliers, potential invalid data points, and distributional assumptions. Issues and decisions with regard to data preparation are summarized below.

Demographic Variables (Age, Gender, Ethnicity, and Mother's Level of Education). The variable "Age" had no missing data, no outlying data points (defined here and below as points greater than or less than three standard deviations from the mean), and met the assumption of normality according to visual inspection of the distribution of scores and a Skewness statistic <1.

The variable "Gender" similarly had no missing data points and no data points of questionable validity.

The variable "Ethnicity" also had no missing data points. "Ethnicity" was originally coded using six categories with which youths could report most closely identifying: African-American, Caucasian, Latino, Multiracial, Asian, and Other. However, the Latino, Multiracial, Asian, and Other groups demonstrated substantially lower cell counts than the African-American and Caucasian categories. For the purpose of balancing these low cell counts in the latter 4 groups with a desire to retain the variability and integrity of the ethnic categories, the variable was recoded into four categories for use as a control variable in regression analyses: African-American, Caucasian, Latino, and Other. Still, low cell counts remained in the Latino (4% of the total sample) and Other (8% of the total sample) categories. Using these latter two categories with such low cell proportions as a basis for testing potentially confounding interaction effects between demographic and predictor variables in regression equations (discussed below) would likely have led to a misinterpretation of the differential effect of ethnicity in any significantly predictive interaction terms. As such, a separate 2-category recoded Ethnicity variable (African-American, Caucasian) was used to test for interaction effects between the Ethnicity and predictor variables on all dependent variables (discussed below).

Finally, the self-report variable "Mother's Level of Education" had no missing values. However, 25 youths (14% of the total sample) responded "I Don't know." In order to retain power, these data points were replaced by the mean of the remaining valid cases as suggested by Cohen and Cohen (1983). The resulting recoded variable had no

outlying data points and met the assumption of normality, as evaluated through visual inspection of the distribution of scores and a Skewness statistic <1.

Predictor variables (Community Violence, Interpersonal Distress, and Loss subscales of the ASTEQ). All three variables, representing total counts of the number of exposure items endorsed by a particular youth for each subscale, had no missing values and no outlying data points. The Community Violence and Loss variables demonstrated modest negative skew through visual inspection of their distributions of scores, while the Interpersonal Distress variable demonstrated a slight positive skew. However, all three variables were unimodal, and had Skewness statistics <1 and, as such, are assumed to meet normality assumptions for subsequent regression analyses.

TSC-C outcome variables (TSC-C Anxiety, Depression, Anger, Posttraumatic Stress, and Dissociation Subscales). The TSC-C's score profile (Briere, 1996) includes two validity scales that cover the response patterns across all TSC-C subscales for a given youth: one that flags response patterns consistent with underresponding (UND), and one for response patterns consistent with hyperresponding (HYP). Briere (1996) recommends that cutoffs of >70 for the UND validity scale, and >90 for the HYP validity scale, be used to identify potentially invalid cases. Out of 185 valid cases, a total of 10 cases (3 UND and 7 HYP) scored above this threshold. These cases were dropped from all regression analyses using any of the 5 TSC-C subscales as DVs. However, these cases were retained for use in regression analyses with the remaining 3 SIDES subscales as DVs. The remaining 175 valid cases for each of these subscales had no missing data points. The distribution of two of the subscales (Anxiety and Dissociation) each had one outlying data point above the mean. However, neither data point was substantially

discrepant from the overall distribution of data. Additionally, the overall response patterns were judged to be valid by the TSC-C scoring program. As such, these data points were retained. Finally, visual inspection of the score distributions suggested that Anxiety, Depression, and Dissociation subcales were slightly positively skewed, while Posttraumatic Stress and Anger subscales were normally distributed. However, all 5 variables demonstrated Skewness statistics <1, and thus all were deemed to meet normality assumptions.

SIDES outcome variables (Self-Destructive, Inability to Trust, and Sustaining Beliefs Subscales). All three SIDES subscales demonstrated no missing data points and no outlying data points. Upon visual inspection, the Self-Destructive variable demonstrated a normal distribution, while the Inability to Trust and Sustaining Beliefs variables demonstrated slight positive skew. However, Skewness statistics were <1 for all three variables, and as such were deemed to meet normality assumptions.

Final descriptive statistics for all prepared study variables are listed in Tables 1 and 2. Additionally, Table 3 reports descriptive statistics for all ASTEQ-2 items comprising the ASTEQ-2 subscales, while Table 4 presents zero-order correlations between all variables in the current study.

Aim 1: Confirmation of ASTEQ Factor Structure

CFA Results

Table 5 presents the factor structure for the 2-factor and 3-factor models, along with standardized factor loadings for each of the 28 manifest variables included in the two models. Table 6 summarizes the fit statistics of the hypothesized 3-factor CFA model, and the alternative CFA 2-factor (Trauma and Stress) model.

Table 2
Descriptive Statistics for Continuous Variables in Regression Models[a]

Variable	Range		Mean	SD
	Minimum	Maximum		
Age	12	19	16.01	1.34
Mother's Level of Education[b]	1	4	2.94	.98
Interpersonal Exposure	0	14	5.14	3.33
Community Violence Exposure	0	8	4.51	2.22
Loss Exposure	0	6	4.08	1.57
SIDES-A				
Self-destructive Behavior	0	12	6.03	2.80
Inability to Trust	0	15	5.85	3.50
Sustaining Beliefs	0	9	3.91	2.76
TSC-C				
Anxiety	35	83	52.58	9.85
Depression	37	79	52.14	9.19
Anger	35	78	53.43	9.49
Posttraumatic Stress	35	78	54.59	9.69
Dissociation	36	86	53.30	9.96

Note. N for all variables=185 except for TSC-C measures, for which N=175; 10 cases were removed due to clinically significant levels of underreporting or overreporting (Briere, 1996).

[a]Assessed by adolescent self-report

[b]Includes mean scores entered for "I don't know" responses

Table 3

Rates of Endorsement for ASTEQ-2 Exposure Items Selected for the Current Study (N=185)

Item	Percentage Responding "Yes"
1. Have you ever been mugged, robbed, or jumped?	68.1
2. Has anyone ever broken into your house or apartment?	49.7
3. Has a parent, caregiver, or brother or sister ever been placed outside the home, like jail, detention, or foster care?	64.9
4. Have kids ever teased, picked on, or bullied you?	50.3
5. Have you ever been rejected or left out of things by other kids?	41.6
6. Have you ever had a really bad break-up with a girlfriend or boyfriend?	66.5
7. Have you ever been in or around a shooting, drug bust, or gang fight?	78.4
8. Have you ever been physically hurt, beaten up, or bruised by a family member or caregiver?	33.0
9. Have you ever been knifed, shot, or shot at?	54.1
10. Have you ever been molested, touched in the wrong places, or made to do sexual things by a family member or caregiver?	21.6
11. Have you ever been molested or forced to do sexual things by someone *outside* your family?	30.3
12. Have you ever seen a person outside your family get beaten up, tortured, shot, shot at, or knifed?	75.7
13. Have you ever had a bad experience with a gang, such as being chased, threatened, or forced to do something that you didn't want to do?	34.1
14. Has a family member, caregiver, or someone you really cared about had a serious illness, injury, or emotional or drug/alcohol problem?	71.9
15. Has a parent, caregiver, family member, or someone you really cared about died?	85.9
16. Has a pet you really cared about ever died or been lost?	67.0
17. Have your parents or caregivers ever hit, choked, pushed, or physically hurt each other?	36.2
18. Has there ever been a lot of yelling and arguing in your family?	70.3
19. Has anyone in your family ever gotten really drunk or out of control from using alcohol or drugs?	51.4
20. Have there been times when your parents or caregivers called you names, put you down, or said cruel things to you?	46.5
21. Have your parents or caregivers ever not taken care of you or not paid attention to you for a long time?	23.8
22. Have you ever had to live on the streets, in a shelter, a refugee camp, or been homeless?	17.8
23. Has there ever been a time when your parents or caregivers did not help you when you were sick or needed to go to the doctor?	14.6
24. Have your parents or caregivers ever left you, thrown you out of the house, or threatened to leave you?	37.3
25. Have you had to do a lot of work at home to help your family, like taking care of your brothers or sisters, cleaning, cooking, yard work, fixing things or doing laundry?	65.9
26. Have you and your family ever not had enough money for food, clothes, or rent?	24.3
27. Have you ever gone into hiding to stay safe or to avoid the police or others out to get you?	60.0
28. Have you ever been beaten up, tied-up, or tortured by someone outside your family?	30.8

Note. On average, each youth endorsed 49% of the 28 items (M=13.7, SD=5.7).

Table 4

Zero-order Correlation Matrix Examining Associations Between All Study Variables

Subscale	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Age	--	-.040	.044	-.126	.119	.014	-.026	--[d]	--[d]	--[d]	--[d]	--[d]	.097	.220**	.207**
2. Gender		--	-.168*	-.049	-.045	.189**	.029	--[d]	--[d]	--[d]	--[d]	--[d]	.130	.235**	.236**
3. Ethnicity (A-A & Caucasian)[a]			--	-.258**	.045	.196*	.198*	.022[c]	.166*[c]	-.151[c]	.065[c]	.083[c]	.250**	-.049	.016
4. Mother's level of Education				--	-.134	-.181*	-.168*	-.144	-.155*	.027	-.050	-.128	-.152*	-.055	-.022
5. Community Violence exposure					--	.348**	.389*	.273**	.192*	.330**	.279**	.367**	.433**	.258**	.336**
6. Interpersonal trauma/stress exposure						--	.351**	.380**	.464**	.259**	.460**	.353**	.416**	.332**	.375**
7. Loss exposure							--	.221**	.238**	.226**	.221**	.275**	.276**	.159**	.255**
8. TSC-C Anxiety[b]								--	.653**	.477**	.652**	.575**	.368**	.289**	.399**
9. TSC-C Depression[b]									--	.292**	.588**	.532**	.397**	.266**	.316**
10. TSC-C Anger[b]										--	.436**	.411**	.289**	.349**	.344**
11. TSC-C Posttraumatic Stress[b]											--	.598**	.396**	.369**	.373**
12. TSC-C Dissociation[b]												--	-.429**	.311**	.468**
13. SIDES-A Self-Destructive Behavior													--	.355**	.438**
14. SIDES-A Inability to Trust														--	.511**
15. SIDES-A Sustaining Beliefs															--

Note. All correlations with N=185 except as noted.

[a]Correlations with N=162 [b]Correlations with N=175 [c]Correlations with N=154 [d]No correlation was generated given that TSC-C subscales are based on age and gender norms

*p< .05 level (2-tailed)

**p< .01 level (2-tailed)

Table 5

Factor Structure and Standardized Factor Loadings of Selected ASTEQ-2 Items for 2-Factor (Trauma vs. Stress) and 3-Factor (Community Violence, Interpersonal, and Loss) CFA Models

	2-Factor		3-Factor		
Item	Trauma	Stress	CV	IP	Loss
1. Have you ever been mugged, robbed, or jumped?	.50		.61		
2. Have you ever been in or around a shooting, drug bust, or gang fight?	.56		.67		
3. Have you ever been knifed, shot, or shot at?	.67		.79		
4. Have you ever seen a person outside your family get beaten up, tortured, shot, shot at, or knifed?	.77		.86		
5. Have you ever gone into hiding to stay safe or to avoid the police or others out to get you?	.50		.60		
6. Have you ever been beaten up, tied up, or tortured by someone outside your family?	.74		.86		
7. Has anyone ever broken into your house or apartment?		.34	.38		
8. Have you ever had a bad experience with a gang, such as being chased, threatened, or forced to do something you didn't want to do?		.57	.70		
9. Have you ever been physically hurt, beaten up, or bruised by a family member or caregiver?	.81			.83	
10. Have you ever been molested, touched in the wrong places, or made to do sexual things by a family member or caregiver?	.58			.62	
11. Have you ever been molested or forced to do sexual things by someone outside your family?	.47			.50	
12. Have your parents or caregivers ever hit, choked, pushed, or physically hurt each other?	.65			.67	
13. Has there ever been a time when your parents or caregivers did not help you when you were sick or needed to go to the doctor?	.68			.69	
14. Have kids ever teased, picked on, or bullied you?		.43		.46	
15. Have you ever been rejected or left out of things by other kids?		.55		.58	

Table 5 continued

Item	2-Factor		3-Factor		
	Trauma	Stress	CV	IP	Loss
16. Has there ever been a lot of yelling and arguing in your family?		.68		.71	
17. Have there been times when your parents or caregivers called you names, put you down, or said cruel things to you?		.73		.76	
18. Have your parents or caregivers ever not taken care of you or not paid attention to you for a long time?		.67		.71	
19. Have you ever had to live on the streets, in a shelter, a refugee camp, or been homeless?		.40		.43	
20. Have your parents ever left you, thrown you out of the house, or threatened to leave you?		.71		.73	
21. Have you had to do a lot of work at home to help your family, like taking care of your brothers and sisters, cleaning, cooking, yard work, fixing things or doing laundry?		.41		.42	
22. Have you and your family ever not had enough money for food, clothes, or rent?		.61		.64	
23. Has a parent, caregiver, family member or someone you really cared about died?	.40				.46
24. Has a parent, caregiver, or brother or sister ever been placed outside the home, like jail, detention, or foster care?		.41			.49
25. Have you ever had a really bad break-up with a girlfriend or boyfriend?		.44			.52
26. Has a family member, caregiver, or someone you really cared about had a serious illness, injury, or emotional or drug/alcohol problem?		.73			.87
27. Has a pet you really cared about ever died or been lost?		.38			.46
28. Has anyone in your family ever gotten really drunk or out of control from using alcohol or drugs?		.66			.78

Note. All loadings statistically significant.

Table 6
Fit Indices for 3-Factor (CV, IPD, Loss) versus Two-Factor (Trauma, Stress) Confirmatory Factor Analyses

Fit Statistic	Trauma vs. Stress 2-Factor	Empirical 3-Factor
Degrees of Freedom	349	347
Sattora-Bentler Scaled Chi-Square	653.5*	431.1*
χ^2/df	1.89	1.24
CFI	.956	.988
RMSEA	.069	.036
P-Value for RMSEA test of close fit	<.001	.984

Note. All 3-factor fit statistics are improvements over the 2-factor model. All fit statistics meet criteria for acceptable fit except for Sattora-Bentler Chi-Square (both models) and RMSEA and its test of close fit (2-Factor model).

*p<.01.

3-Factor model. Standardized factor loadings for individual ASTEQ-2 items ranged from .38 to .87. The Sattora-Bentler χ^2 value is large and statistically significant. However, as Kline (1998) noted, this is not a surprising result given that it is not a test of "acceptable" fit, but rather a test of whether the model does or does not fit the data perfectly, a rare and unnecessary event for assessment of model adequacy. Futhermore, all other fit statistics (χ^2/df, CFI, NNFI, RMSEA, and RMSEA's test of close fit) meet and exceed criteria necessary for model acceptability. Specifically, the χ^2/df value is 50% lower than the criteria of 2.5; the CFI and NNFI incremental fit indices both suggest that the model explains nearly 99% of the variance in the data, and the RMSEA test of close fit indicates over a 98% probability that the population's true RMSEA value from which this sample was drawn falls within the recommended cutoff criteria of .05. As such, this model can be seen as adequately fitting the observed data.

2-Factor model. Comparatively, all fit statistics for the alternative Trauma and Stress model demonstrated less fit to the observed data. Factor loadings on the 2-factor model were of roughly the same magnitude, ranging from .34 to .81. However, individual standardized loadings for each of the 28 items were lower in the 2-factor model than the 3-factor model. The Sattora-Bentler χ^2 value was also statistically significant, but was larger than the value for the 3-factor model. The χ^2/df did meet criteria for model acceptability, but was lower than the term for the 3-factor model. Similarly, while the CFI and NNFI incremental fit indices just exceeded the .95 criteria, the terms were notably lower than the terms in the 3-factor model. Finally and perhaps most importantly, however, the RMSEA value of .069 was substantially larger than both the recommended .05 cutoff value and the value of the 3-factor model, and the associated

test of close fit indicated an extremely small likelihood that the true RMSEA value in the population was less than the recommended cutoff value. Taken together, the 2-factor model is rejected in favor of the hypothesized 3-factor model.

Subscale Reliabilities. While the 3-factor CFA established the overall pattern of fit of the ASTEQ-2 factors, this does not explicitly establish the extent to which each subscale demonstrates internal consistency across its scale items. While a "typical" Chronbach's alpha coefficient is often run on non-normal and binary data, it is based on a matrix of correlation coefficients assuming a normal distribution of data, and therefore (as described above) can be expected to be misrepresentations of the true alpha coefficient to the extent that they diverge from this normality assumption. In the case of binary data, this number will always be an underestimate. However, if the researcher thinks that the two categories are simply manifestations of an underlying, latent, normally distributed construct, it is theoretically defensible and appropriate to calculate estimates of internal consistency based on a matrix of tetrachoric correlations, analogous to that used in the EFA and CFA analyses described above (see Bonett and Price, 2005; and Grayson, 1998, for support of the tetrachoric correlation as a measure of consistency), and other authors have done so (Chabrol et al., 2003).

In support of this approach, Table 7 depicts estimates of internal consistency based on phi coefficients, as compared to those based on a matrix of tetrachoric correlations. It can be seen that the tetrachoric-based terms are consistently and substantially higher than those derived from phi coefficients, and that all 3 subscale alphas achieve the generally accepted criteria of .7 or above. While a recent review of cutoff values has strongly questioned the universal applicability of this number (Lance,

Table 7
Chronbach's Alpha Estimates of Internal Consistency for ASTEQ-2 factors

Subscale (Tetrachoric)	α (Phi)	α
Community Violence Exposure (8 Items)	.74	.86
Interpersonal Exposure (14 Items)	.80	.89
Loss Exposure (6 Items)	.59	.74

Note. All 3 Scales based on tetrachoric correlations exceed recommended cutoff value of .7 for initial scale development (see Nunnaly, 1978).

Butts, & Michels, 2006), it was originally suggested by Nunnally (1978) as an acceptable threshold in newer areas of research, for which the current study would likely qualify given that scale development for the ASTEQ-2 will almost certainly extend beyond this current study. The use of tetrachoric coefficients becomes particularly useful in evaluating the adequacy of the Loss subscale's internal consistency, given that it changes our decision about its acceptability if we use the .7 cutoff criteria. In addition, given that the factor structure examined above is based on a matrix of tetrachoric correlations derived from the same data, it is logical to consider the alpha coefficients based on these correlations to be equally valid and better estimates of the true population values for each of the three subscales. These coefficients, then, indicate sufficient reliability for all the scales, and thus all three scales were used in hierarchical regression analyses to test the remaining hypotheses.

Aim 2: Differential Prediction of Psychological Outcomes by ASTEQ-2 factors

Data Screening and Preparation for Hierarchical Regression Analyses

Control Variable x ASTEQ-2 Subscale Moderation Analyses. Of the 66 moderation analyses conducted, three were statistically significant:

2) Gender moderated the relationship between Loss and Self-Destructive Behavior, such that females evidenced a stronger positive relationship between Loss and Self-Destructive Behavior than males;
3) Age moderated the relationship between Interpersonal exposure and Inability to Trust, such that older youths evidenced a stronger positive relationship between amount of Interpersonal exposure and the level of Inability to trust than younger youths;

4) Ethnicity moderated the relationship between Loss and Sustaining Beliefs, such that increases in Loss exposure resulted in higher disruptions in Sustaining Beliefs for Caucasian youths, as compared to African-American youths.

Each of these moderation terms uniquely accounted for approximately 2% of the total variance in the DV, over and above the terms' individual main effects. As a result, each of the three interaction terms was entered in the final step of regression models testing the unique predictive ability of the individual ASTEQ-2 factors of the appropriate DV.

Predictive Ability of Individual ASTEQ-2 factors

Results of the 24 hierarchical regression equations suggest that all three ASTEQ-2 factors predicted a significant portion of variance in all 8 outcomes, over and above any effects of Age, Gender, Ethnicity, and Mother's Level of Education. The magnitude of these statistically significant standardized Beta coefficients varied moderately across both predictor IVs and outcomes, from .156 (Loss exposure predicting Inability to Trust) to .478 (Interpersonal exposure predicting Posttraumatic Stress). These results provide conceptual support for entering all three ASTEQ-2 factors simultaneously in the final step of a hierarchical regression equation to determine the relative portions of *unique* variance each predictor accounts for across the eight outcomes. A summary of the results for this series of analyses is presented in Table 8.

Differentially Predictive Abilities of Competing ASTEQ-2 factors

Table 9 summarizes the final regression models for the five TSC-C outcomes and the three SIDES-A outcomes. Multiple R-squared changes and associated levels of

Table 8
Summary of Hierarchical Multiple Regression Analyses for Individual ASTEQ-2 factors

Outcome	Block/Step	*B*	Total R^2	Semipartial^2 (R^2 Change)	F-Change
TSC-C Anxiety	**Step 1**		.023		.982
(N=175)	African-American vs. All Other Ethnic Groups	.016			
	Caucasian vs. All Other Ethnic Groups	.002			
	Latino vs. All Other Ethnic Groups	- .037			
	Mother's Educational Level	- .143			
	Step 2		.097**	.074	
13.883**					
	African-American vs. All Other Ethnic Groups	.079			
	Caucasian vs. All Other Ethnic Groups	.053			
	Latino vs. All Other Ethnic Groups	- .052			
	Mother's Educational Level	- .114			
	Community Violence	.279**			
	Step 1		.023		.982
	African-American vs. All Other Ethnic Groups	.016			
	Caucasian vs. All Other Ethnic Groups	.002			
	Latino vs. All Other Ethnic Groups	- .037			
	Mother's Educational Level	- .143			
	Step 2		.164**	.141	
28.510**					
	African-American vs. All Other Ethnic Groups	.159			
	Caucasian vs. All Other Ethnic Groups	.051			
	Latino vs. All Other Ethnic Groups	.008			
	Mother's Educational Level	- .090			
	Interpersonal Exposure	.395**			
	Step 1		.023		.982
	African-American vs. All Other Ethnic Groups	.016			
	Caucasian vs. All Other Ethnic Groups	.002			
	Latino vs. All Other Ethnic Groups	- .037			
	Mother's Educational Level	- .143			

Table 8 Continued

Outcome	Block/Step	*B*	Total R^2	Semipartial^2 (R^2 Change)	F-Change
	Step 2		.065**	.042	7.655**
	African-American vs. All Other Ethnic Groups	.070			
	Caucasian vs. All Other Ethnic Groups	.015			
	Latino vs. All Other Ethnic Groups	- .020			
	Mother's Educational Level	- .115			
	Loss	.213**			
TSC-C Depression	**Step 1**		.052		2.319
(N = 175)	African-American vs. All Other Ethnic Groups	- .107			
	Caucasian vs. All Other Ethnic Groups	.029			
	Latino vs. All Other Ethnic Groups	.082			
	Mother's Educational Level	- .135			
	Step 2		.077*	.025	4.537*
	African-American vs. All Other Ethnic Groups	- .071			
	Caucasian vs. All Other Ethnic Groups	.058			
	Latino vs. All Other Ethnic Groups	.073			
	Mother's Educational Level	- .119			
	Community Violence	.161*			
	Step 1		.052		2.319
	African-American vs. All Other Ethnic Groups	- .107			
	Caucasian vs. All Other Ethnic Groups	.029			
	Latino vs. All Other Ethnic Groups	.082			
	Mother's Educational Level	- .135			
	Step 2		.234**	.182	40.229**
	African-American vs. All Other Ethnic Groups	.056			
	Caucasian vs. All Other Ethnic Groups	.084			
	Latino vs. All Other Ethnic Groups	.134			
	Mother's Educational Level	- .075			
	Interpersonal Exposure	.449**			

Table 8 Continued

Outcome	Block/Step	*B*	Total R^2	Semipartial^2 (R^2 Change)	F-Change
	Step 1		.052		2.319
	African-American vs. All Other Ethnic Groups	- .107			
	Caucasian vs. All Other Ethnic Groups	.029			
	Latino vs. All Other Ethnic Groups	.082			
	Mother's Educational Level	- .135			
	Step 2		.089**	.038	7.004**
	African-American vs. All Other Ethnic Groups	- .056			
	Caucasian vs. All Other Ethnic Groups	.041			
	Latino vs. All Other Ethnic Groups	.098			
	Mother's Educational Level	- .109			
	Loss	.201**			
TSC-C Anger	**Step 1**		.022		0.937
(N = 175)	African-American vs. All Other Ethnic Groups	.092			
	Caucasian vs. All Other Ethnic Groups	- .066			
	Latino vs. All Other Ethnic Groups	.001			
	Mother's Educational Level	- .006			
	Step 2		.143**	.122	24.014**
	African-American vs. All Other Ethnic Groups	.172			
	Caucasian vs. All Other Ethnic Groups	- .002			
	Latino vs. All Other Ethnic Groups	- .018			
	Mother's Educational Level	.031			
	Community Violence	.357**			
Step 1			.022		0.937
	African-American vs. All Other Ethnic Groups	.092			
	Caucasian vs. All Other Ethnic Groups	- .066			
	Latino vs. All Other Ethnic Groups	.001			
	Mother's Educational Level	- .006			

Table 8 Continued

Outcome	Block/Step	*B*	Total R^2	Semipartial^2 (R^2 Change)	F-Change
	Step 2		.118**	.096	18.373**
	African-American vs. All Other Ethnic Groups	.210			
	Caucasian vs. All Other Ethnic Groups	- .026			
	Latino vs. All Other Ethnic Groups	.038			
	Mother's Educational Level	.038			
	Interpersonal Exposure	.326**			
	Step 1		.022		0.937
	African-American vs. All Other Ethnic Groups	.092			
	Caucasian vs. All Other Ethnic Groups	- .066			
	Latino vs. All Other Ethnic Groups	.001			
	Mother's Educational Level	- .006			
	Step 2		.092**	.070	13.053**
	African-American vs. All Other Ethnic Groups	.161			
	Caucasian vs. All Other Ethnic Groups	- .050			
	Latino vs. All Other Ethnic Groups	.023			
	Mother's Educational Level	.031			
	Loss	.274**			
TSC-C Posttraumatic Stress (N = 175)	**Step 1**		.009		0.368
	African-American vs. All Other Ethnic Groups	- .123			
	Caucasian vs. All Other Ethnic Groups	- .054			
	Latino vs. All Other Ethnic Groups	- .042			
	Mother's Educational Level	- .036			
	Step 2		.288**	.074	13.652**
	African-American vs. All Other Ethnic Groups	- .060			
	Caucasian vs. All Other Ethnic Groups	- .003			
	Latino vs. All Other Ethnic Groups	- .057			
	Mother's Educational Level	- .008			
	Community Violence	.279**			

Table 8 Continued

Outcome	Block/Step	*B*	Total R^2	Semipartial^2 (R^2 Change)	F-Change
	Step 1		.009		0.368
	African-American vs. All Other Ethnic Groups	- .123			
	Caucasian vs. All Other Ethnic Groups	- .054			
	Latino vs. All Other Ethnic Groups	- .042			
	Mother's Educational Level	- .036			
	Step 2		.215**	.206	44.362**
	African-American vs. All Other Ethnic Groups	.050			
	Caucasian vs. All Other Ethnic Groups	.005			
	Latino vs. All Other Ethnic Groups	.013			
	Mother's Educational Level	.028			
	Interpersonal Exposure	.478**			
	Step 1		.009		0.368
	African-American vs. All Other Ethnic Groups	- .123			
	Caucasian vs. All Other Ethnic Groups	- .054			
	Latino vs. All Other Ethnic Groups	- .042			
	Mother's Educational Level	- .036			
	Step 2		.050**	.042	7.457**
	African-American vs. All Other Ethnic Groups	- .069			
	Caucasian vs. All Other Ethnic Groups	- .041			
	Latino vs. All Other Ethnic Groups	- .025			
	Mother's Educational Level	- .008			
	Loss	.212**			
TSC-C Dissociation (N = 175)	**Step 1**		.034		1.485
	African-American vs. All Other Ethnic Groups	- .170			
	Caucasian vs. All Other Ethnic Groups	- .101			
	Latino vs. All Other Ethnic Groups	.027			
	Mother's Educational Level	- .122			

Table 8 Continued

Outcome	Block/Step	*B*	Total R^2	Semipartial^2 (R^2 Change)	F-Change
	Step 2		.148**	.114	22.663**
	African-American vs. All Other Ethnic Groups	- .092			
	Caucasian vs. All Other Ethnic Groups	- .038			
	Latino vs. All Other Ethnic Groups	.008			
	Mother's Educational Level	- .086			
	Community Violence	.346**			
	Step 1		.034		1.485
	African-American vs. All Other Ethnic Groups	- .170			
	Caucasian vs. All Other Ethnic Groups	- .101			
	Latino vs. All Other Ethnic Groups	.027			
	Mother's Educational Level	- .122			
	Step 2		.137**	.103	20.272**
	African-American vs. All Other Ethnic Groups	- .047			
	Caucasian vs. All Other Ethnic Groups	- .059			
	Latino vs. All Other Ethnic Groups	.066			
	Mother's Educational Level	- .076			
	Interpersonal Exposure	.338**			
	Step 1		.034		1.485
	African-American vs. All Other Ethnic Groups	- .170			
	Caucasian vs. All Other Ethnic Groups	- .101			
	Latino vs. All Other Ethnic Groups	.027			
	Mother's Educational Level	- .122			
	Step 2		.093**	.059	11.059**
	African-American vs. All Other Ethnic Groups	- .106			
	Caucasian vs. All Other Ethnic Groups	- .086			
	Latino vs. All Other Ethnic Groups	.047			
	Mother's Educational Level	- .088			
	Loss	.252**			

Table 8 Continued

Outcome	Block/Step	*B*	Total R^2	Semipartial^2 (R^2 Change)	F-Change
SIDES – A:					
Self-Destructive Behavior	**Step 1**		.126		4.295
(N = 185)	Age	.084			
	Gender	.168			
	African-American vs. All Other Ethnic Groups	- .271			
	Caucasian vs. All Other Ethnic Groups	.009			
	Latino vs. All Other Ethnic Groups	.046			
	Mother's Educational Level	- .079			
	Step 2		.280**	.153	37.647**
	Age	.043			
	Gender	.188			
	American vs. All Other Ethnic Groups	- .166			
	Caucasian vs. All Other Ethnic Groups	.100			
	Latino vs. All Other Ethnic Groups	.037			
	Mother's Educational Level	- .028			
	Community Violence	.405**			
	Step 1		.126		4.295
	Age	.084			
	Gender	.168			
	African-American vs. All Other Ethnic Groups	- .271			
	Caucasian vs. All Other Ethnic Groups	.009			
	Latino vs. All Other Ethnic Groups	.046			
	Mother's Educational Level	- .079			
	Step 2		.232**	.106	24.421**
	Age	.082			
	Gender	.100			
	American vs. All Other Ethnic Groups	- .141			
	Caucasian vs. All Other Ethnic Groups	.057			
	La tino vs. All Other Ethnic Groups	.084			
	Mother's Educational Level	- .039			
	Interpersonal Exposure	.349**			

Table 8 Continued

Outcome	Block/Step	*B*	Total R^2	Semipartial^2 (R^2 Change)	F-Change
	Step 1		.126		4.295
	Age	.084			
	Gender	.168			
	African-American vs. All Other Ethnic Groups	- .271			
	Caucasian vs. All Other Ethnic Groups	.009			
	Latino vs. All Other Ethnic Groups	.046			
	Mother's Educational Level	- .079			
	Step 2		.170**	.043	9.194**
	Age	.093			
	Gender	.160			
	American vs. All Other Ethnic Groups	- .213			
	Caucasian vs. All Other Ethnic Groups	.022			
	Latino vs. All Other Ethnic Groups	.063			
	Mother's Educational Level	- .052			
	Loss	.216**			
SIDES – A:					
Inability to Trust	**Step 1**		.124		4.193
(N = 185)	Age	.232			
	Gender	.233			
	African-American vs. All Other Ethnic Groups	- .191			
	Caucasian vs. All Other Ethnic Groups	- .191			
	Latino vs. All Other Ethnic Groups	- .030			
	Mother's Educational Level	- .017			
	Step 2		.175**	.051	10.922**
	Age	.207			
	Gender	.245			
	American vs. All Other Ethnic Groups	- .131			
	Caucasian vs. All Other Ethnic Groups	- .138			
	Latino vs. All Other Ethnic Groups	- .035			
	Mother's Educational Level	.013			
	Community Violence	.234**			

Table 8 Continued

Outcome	Block/Step	*B*	Total R^2	Semipartial^2 (R^2 Change)	F-Change
Sides-A:	**Step 1**		.124		4.193
Inability to Trust	Age	.232			
(N=185)	Gender	.233			
	African-American vs. All Other Ethnic Groups	- .191			
	Caucasian vs. All Other Ethnic Groups	- .191			
	Latino vs. All Other Ethnic Groups	- .030			
	Mother's Educational Level	- .017			
	Step 2		.203**	.079	17.609**
	Age	.229			
	Gender	.175			
	American vs. All Other Ethnic Groups	- .079			
	Caucasian vs. All Other Ethnic Groups	- .149			
	Latino vs. All Other Ethnic Groups	.003			
	Mother's Educational Level	.018			
	Interpersonal Exposure	.302**			
	Step 1		.124		4.193
	Age	.232			
	Gender	.233			
	African-American vs. All Other Ethnic Groups	- .191			
	Caucasian vs. All Other Ethnic Groups	- .191			
	Latino vs. All Other Ethnic Groups	- .030			
	Mother's Educational Level	- .017			
	Step 2		.146*	.023	4.673*
	Age	.238			
	Gender	.228			
	American vs. All Other Ethnic Groups	- .150			
	Caucasian vs. All Other Ethnic Groups	- .181			
	Latino vs. All Other Ethnic Groups	- .018			
	Mother's Educational Level	.003			
	Lo ss	.156*			

Table 8 Continued

Outcome	Block/Step	*B*	Total R^2	Semipartial^2 (R^2 Change)	F-Change
SIDES – A:					
Sustaining Beliefs	**Step 1**		.101		3.324
(N = 185)	Age	.173			
	Gender	.195			
	African-American vs. All Other Ethnic Groups	- .310			
	Caucasian vs. All Other Ethnic Groups	- .237			
	Latino vs. All Other Ethnic Groups	- .077			
	Mother's Educational Level	- .016			
	Step 2		.201**	.101	22.325**
	Age	.139			
	Gender	.212			
	American vs. All Other Ethnic Groups	- .225			
	Caucasian vs. All Other Ethnic Groups	- .162			
	Latino vs. All Other Ethnic Groups	- .083			
	Mother's Educational Level	.026			
	Community Violence	.329**			
	Step 1		.101		3.324
	Age	.173			
	Gender	.195			
	African-American vs. All Other Ethnic Groups	- .310			
	Caucasian vs. All Other Ethnic Groups	- .237			
	Latino vs. All Other Ethnic Groups	- .077			
	Mother's Educational Level	- .016			
	Step 2		.235**	.134	31.085**
	Age	.170			
	Gender	.119			
	American vs. All Other Ethnic Groups	- .164			
	Caucasian vs. All Other Ethnic Groups	- .182			
	Latino vs. All Other Ethnic Groups	- .033			
	Mother's Educational Level	.030			
	Interpersonal Exposure	.393**			

Table 8 Continued

Outcome	Block/Step	*B*	Total R^2	Semipartial^2 (R^2 Change)	F-Change
Sides-A:	**Step 1**		.101		3.324
Sustaining Beliefs	Age	.173			
(N=185)	Gender	.195			
	African-American vs. All Other Ethnic Groups	- .310			
	Caucasian vs. All Other Ethnic Groups	- .237			
	Latino vs. All Other Ethnic Groups	- .077			
	Mother's Educational Level	- .016			
	Step 2		.153**	.053	11.018**
	Age	.183			
	Gender	.187			
	American vs. All Other Ethnic Groups	- .247			
	Caucasian vs. All Other Ethnic Groups	- .221			
	Latino vs. All Other Ethnic Groups	- .058			
	Mother's Educational Level	.014			
	Loss	.238**			

*p<.05
**p<.01

significance for each block are reported, as well as standardized and unstandardized beta coefficients, associated levels of significance, and squared semipartial correlation coefficients for each unique predictor of interest. As discussed above, separate interaction terms were entered in step three for each of the three SIDES-A subscales.

Demographic Variables. No demographic variables significantly predicted any of the TSC-C outcomes, with the exception of a statistical trend (p=.063) for African-American youths to report higher levels of anger as compared to all other ethnic groups. This is not surprising given that, as discussed above, the TSC-C scores were already normed for age and gender.

Certain demographic variables did, however, account for significant portions of variance ($p<.05$) in the final step of all three SIDES-A outcomes (see Table 9). Specifically, Gender accounted for a significant portion of variance in all three SIDES-A outcomes, with females evidencing significantly higher levels of self-destructive behavior than males over and above all other variables in the model. Additionally, Age also accounted for a significant portion of variance in Inability to Trust and Sustaining Beliefs subscales, with older youths demonstrating higher levels of dysfunction.

Community Violence Exposure. While controlling for all other variables in the model, the ASTEQ-2 Community Violence subscale demonstrated significant standardized Beta coefficients for six of the eight outcomes: TSC-C Anxiety, TSC-C Anger, TSC-C Dissociation, SIDES-A Self-Destructive Behavior, SIDES-A Inability to Trust, and SIDES-A Sustaining Beliefs. Its unique Beta coefficient was nonsignificant for TSC-C Depression, and demonstrated only a trend towards significance (p=.065) for TSC-C Posttraumatic Stress. Squared semipartial correlations (or proportion of total variance in the outcome uniquely accounted for by

Table 9
Summary of Final Regression Models for Simultaneously Entered ASTEQ-2 factors

Outcome	Final Model	b	ß	Total R^2	Block R^2 Change[a]	Sig. t-value	ASTEQ-2 Semipartial[2]
TSC-C Anxiety				.189**	.166**		
(N=175)	African-American vs. All Other Ethnicities	3.68	.179				
	Caucasian vs. All Other Ethnicities	1.71	.074				
	Latino vs. All Other Ethnicities	-.28	-.006				
	Level of Mom's Education	-.79	-.078				
	Community Violence Exposure	**.74**	**.163**			**2.07***	**.021**
	Interpersonal Exposure	**1.02**	**.330**			**4.05****	**.080**
	Loss Exposure	.17	.027				.001
TSC-C Depression				.235**	.184**		
(N=175)	African-American vs. All Other Ethnicities	1.16	.061				
	Caucasian vs. All Other Ethnicities	1.86	.086				
	Latino vs. All Other Ethnicities	5.88	.134				
	Level of Mom's Education	-.68	-.071				
	Community Violence Exposure	.04	.010				.000
	Interpersonal Exposure	1.25	**.432**			**5.48****	**.138**
	Loss Exposure	.21	.034				.001
TSC-C Anger				.193**	.172**		
(N=175)	African-American vs. All Other Ethnicities	4.90	.247			1.87†	
	Caucasian vs. All Other Ethnicities	.24	.011				
	Latino vs. All Other Ethnicities	.83	.018				
	Level of Mom's Education	.59	.061				
	Community Violence Exposure	**1.11**	**.255**			**3.25****	**.051**
	Interpersonal Exposure	**.60**	**.200**			**2.47***	**.029**
	Loss Exposure	.63	.102				.008

Table 9 Continued

Outcome	Final Model	b	ß	Total R^2	Block R^2 Change[a]	Sig. t-value	ASTEQ-2 Semipartial[2]
TSC-C Posttraumatic Stress (N=175)				.232**	.223**		
	African-American vs. All Other Ethnicities	1.30	.064				
	Caucasian vs. All Other Ethnicities	.57	.025				
	Latino vs. All Other Ethnicities	-.01	.000				
	Level of Mom's Education	.36	.036				
	Community Violence Exposure	**.63**	**.142**			**1.86†**	**.016**
	Interpersonal Exposure	**1.31**	**.431**			**5.45****	**.137**
	Loss Exposure	-.03	-.005				.000
TSC-C Dissociation (N=175)				.202**	.168**		
	African-American vs. All Other Ethnicities	-.29	-.014				
	Caucasian vs. All Other Ethnicities	-.56	-.024				
	Latino vs. All Other Ethnicities	2.17	.046				
	Level of Mom's Education	-.57	-.056				
	Community Violence Exposure	**1.12**	**.246**			**3.15****	**.046**
	Interpersonal Exposure	**.71**	**.227**			**2.81****	**.038**
	Loss Exposure	.48	.073				.004
SIDES Self-Destructive Behavior (N=185)				.328**	.190**		
	Age	.10	.049				
	Gender	**.79**	**.141**			**2.13***	
	African-American vs. All Other Ethnicities	-.62	-.105				
	Caucasian vs. All Other Ethnicities	.75	.113				
	Latino vs. All Other Ethnicities	.87	.063				
	Level of Mom's Education	-.04	-.013				
	Community Violence Exposure	**.41**	**.326**			**4.44****	**.077**
	Interpersonal Exposure	**.19**	**.223**			**2.93****	**.033**
	Loss Exposure	-.01	-.007				.000

Table 9 Continued

Outcome	Final Model	b	ß	Total R^2	Block R^2 Change[a]	Sig. t-value	ASTEQ-2 Semipartial[2]
SIDES Inability to Trust (N=185)				.249**	.125**		
	Age	**.57**	**.216**			**3.22****	
	Gender	**1.26**	**.180**			**2.58***	
	African-American vs. All Other Ethnicities	-.37	-.050				
	Caucasian vs. All Other Ethnicities	-1.13	.136				
	Latino vs. All Other Ethnicities	.03	.001				
	Level of Mom's Education	.13	.035				
	Community Violence Exposure	**.27**	**.170**			**2.18***	**.020**
	Interpersonal Exposure	**.26**	**.246**			**3.09****	**.041**
	Loss Exposure	-.01	-.004				.000
	Age x Interpersonal Interaction	**.15**	**.175**			**2.60****	**.029**
SIDES Sustaining Beliefs[a] (N=162)				.296**	.187**		
	Age	**.36**	**.174**			**2.44***	
	Gender	**1.25**	**.227**			**3.14****	
	African-American vs. Caucasian Ethnities	-.23	-.036				
	Level of Mom's Education	.27	.097				
	Community Violence Exposure	**.27**	**.223**			**2.81****	**.036**
	Interpersonal Exposure	**.19**	**.227**			**2.74****	**.034**
	Loss Exposure	-.01	-.008				.000
	Ethnicity x Loss Interaction	**.73**	**.205**			**2.49***	**.029**

[a]Refers to final step in which ASTEQ-2 factors (Community Violence exposure , Interpersonal exposure, and Loss exposure) and interaction terms (if appropriate) were entered simultaneously.

$^{\dagger}p<.10$

*p<.05

**p<.01

Community Violence) associated with significant Beta coefficients ranged from .020 (Inability to Trust) to .077 (Self-Destructive Behavior). This subscale accounted for the highest proportion of unique explained outcome variance of the three ASTEQ-2 predictors in four of the eight outcomes (Anger, Dissociation, Self-Destructive Behavior, and Sustaining Beliefs). It is noteworthy, however, that for the Sustaining Beliefs outcome, the demographic variable Gender did account for a slightly higher proportion of unique variance (.045 versus .036). In addition, the Community Violence factor accounted for over twice as much unique variance in SIDES-A Self-Destructive Behavior than any other factor. All significant results were in the expected direction, with higher levels of exposure associated with higher rates of psychological dysfunction. On average, the Community Violence factor shared 68% of its explained outcome variance with the other two ASTEQ-2 factors (see Table 10).

Interpersonal Exposure. While controlling for all other variables in the model, the ASTEQ-2 Interpersonal subscale demonstrated significant standardized Beta coefficients for all eight outcomes. Squared semipartial correlations associated with significant Beta coefficients ranged substantially across outcomes, however, from .029 (Anger) to .138 (Depression). This subscale accounted for the highest proportion of unique total outcome variance of the three ASTEQ-2 predictors in four of the eight outcomes (Anxiety, Depression, Posttraumatic Stress, and Inability to Trust). It is noteworthy, however, that for the Inability to Trust outcome, the demographic variable Age did account for a slightly higher proportion of unique variance (.044 versus .041). The Interpersonal trauma/stress factor also accounted for more unique variance than the other two factors in four of the eight outcomes (TSC-C Anxiety, TSC-C Depression, TSC-C Posttraumatic Stress, and SIDES-A Inability to Trust), and explained at least double the

Table 10

Total Outcome Variance Explained, Unique Outcome Variance Explained, and Percentages of Total Variance Explained that is Shared, for Each ASTEQ-2 Subscale and Outcome

Outcome		Community Violence Exposure	Interpersonal Exposure	Loss Exposure
Anxiety	Independent sr^2	.074	.141	.042
	Unique sr^2	.021 (72%)	**.080** *(44%)*	.001 (98%)
Depression	Independent sr^2	.025	.182	.038
	Unique sr^2	.000 (>99%)	**.138** *(24%)*	.001 (97%)
Anger	Independent sr^2	.122	.096	.070
	Unique sr^2	.051 (58%)	.029 (70%)	.008 (89%)
Posttraumatic Stress	Independent sr^2	.074	.206	.042
	Unique sr^2	.016 (78%)	**.137** *(33%)*	.000 (>99%)
Dissociation	Independent sr^2	.114	.103	.059
	Unique sr^2	.046 (60%)	.038 (63%)	.004 (93%)
Self-Destructive Behavior	Independent sr^2	.153	.106	.043
	Unique sr^2	**.077** *(50%)*	.033 (69%)	.000 (>99%)
Inability to Trust	Independent sr^2	.051	.079	.023
	Unique sr^2	.020 (60%)	**.041** *(48%)*	.000 (>99%)
Sustaining Beliefs	Independent sr^2	.101	.134	.053
	Unique sr^2	.036 (64%)	.034 (75%)	.001 (98%)

Note. Age, Gender, Ethnicity, and Mother's Level of Education have been controlled for. Numbers in parentheses represent the proportion of total variance accounted for that is shared with other ASTEQ subscales for that outcome. Numbers for Inability to Trust and Sustaining Beliefs outcomes include the variance accounted for by the interaction terms included in the final model. Numbers in bold represent a proportion of unique variance accounted for that is at least twice the size of any other ASTEQ-2 scale. Percentages of shared explained variance of 50% or less are in italics.

amount of unique variance of any other demographic or predictor variable for those four outcomes. Further, for two of the outcomes (TSC-C Depression and TSC-C Posttraumatic Stress), it explained at least *eight* times the amount of variance compared to any other demographic or predictor variable. On average, the Interpersonal factor shared 53% of its explained outcome variance with the other two ASTEQ-2 factors (see Table 10).

Loss Exposure. While the Loss subscale accounted for significant portions of variance in all eight independent regressions, it did not account for a significant portion of *unique* variance in any of the eight outcomes in the final model. Consistent with this finding, it shared, on average, 97% of its explained outcome variance with the other two ASTEQ-2 factors (see Table 10).

Interaction Terms. Contrary to its effect in the independent regression model, the Gender x Loss interaction term entered in the final step for the Self-Destructive Behavior outcome did not account for a significant portion of variance in the final model with all three ASTEQ-2 factors entered simultaneously, and thus was not included in the final model or interpreted. However, the unique standardized Beta coefficients for the final two interaction terms (Age x Interpersonal à Inability to Trust; Ethnicity x Loss à Sustaining Beliefs) were both statistically significant and are included in the final model. Figures 1 and 2 demonstrate the effects of the two interaction terms, each of which account for approximately 3% of the total variance in their respective outcomes in the final model.

It can be seen in Figure 1 that, for youths one standard deviation below the mean for age (just under 15 years of age), there is virtually no association between Interpersonal exposure and Inability to Trust. However, for youths one standard deviation above the mean for age (just over

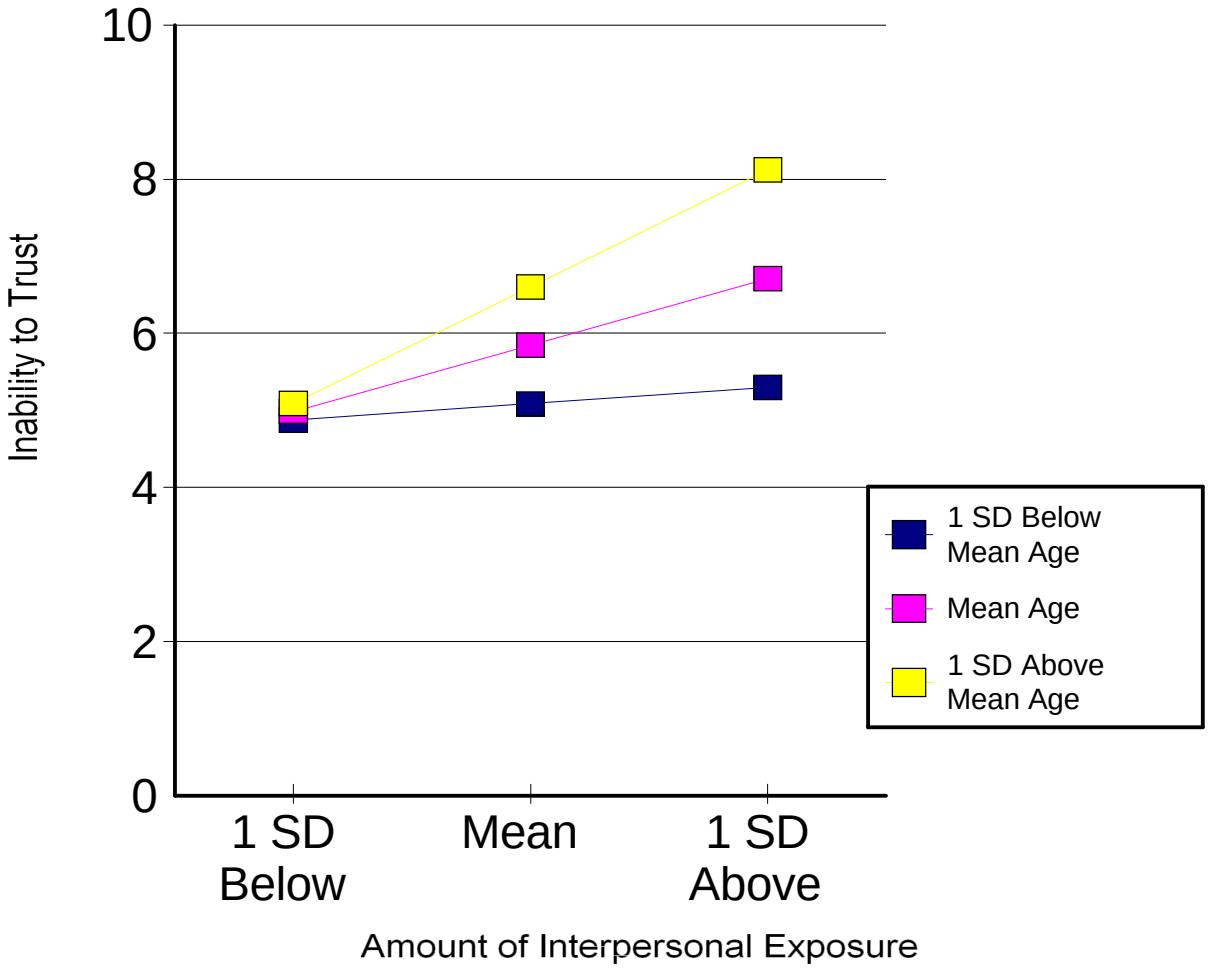

Figure 1. Moderating effect of Age on the association between level of Interpersonal exposure and Inability to Trust. Effects depicted are over and above those of all other demographic and predictor variables in the final regression model. Mean age is exactly 16 years; one SD below the mean equates to 14.7 years of age, while one SD above the mean equates to 17.3 years of age.

17 years of age), each standard deviation increase in Interpersonal exposure (approximately 3 ½ additional items endorsed on a 14 item scale) results in a 3-point increase in Inability to Trust (on a 0-15 scale).

Figure 2 demonstrates no association between Loss exposure and Sustaining Beliefs for African-American youths. However, for Caucasian youths, each standard deviation increase in Loss (approximately 1.5 additional items endorsed on a 6 item scale) results in approximately a 1-point increase in disruption of Sustaining Beliefs (on a 0-9 scale).

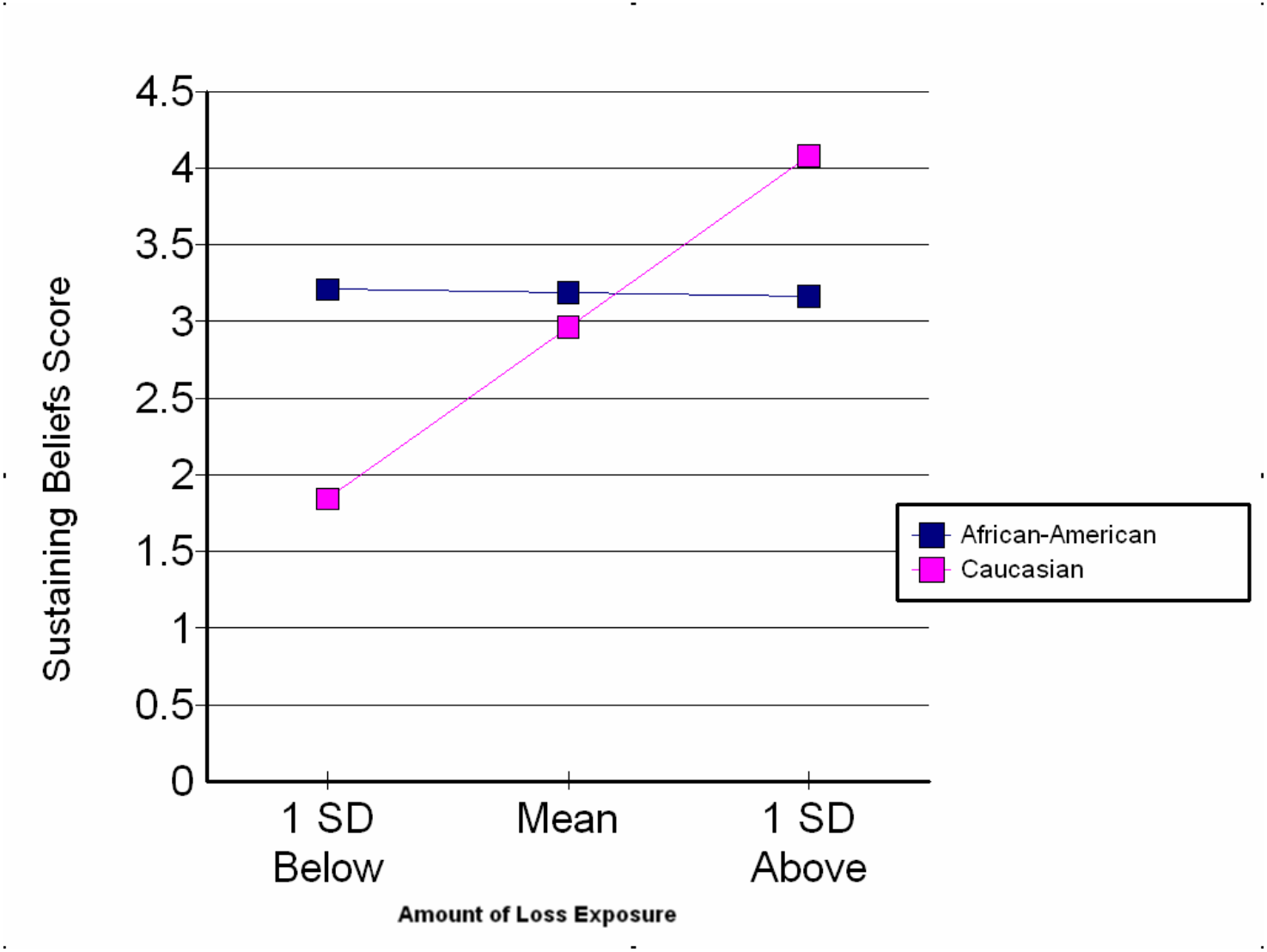

Figure 2. Moderating effect of Ethnicity on the association between Loss exposure and disruption of Sustaining Beliefs. Effects depicted are over and above those of all other demographic and predictor variables in the final regression model.

CHAPTER 5

Discussion

The goal of the current study was twofold. The first goal was to use CFA to confirm the factor structure of a new, revised self-report measure of lifetime exposure to potentially traumatic and stressful events for youths at high risk for these events and associated psychosocial difficulties (ASTEQ-2), using a sample of incarcerated adolescent males and females. It then attempted to determine whether this empirically-derived factor structure, which clustered events according to three *types* of categories (i.e., Community Violence, Interpersonal Exposure, and Loss), provided a better framework compared to an alternative two-factor structure based on *severity* of the event (i.e., Trauma vs. Stress). Second, the study attempted to determine the extent to which these three confirmed factors differentially predicted a range of psychosocial outcomes, based on prior research. It also attempted to move beyond this research by testing the extent to which each of the three ASTEQ-2 factors differentially accounted for unique outcome variance, over and above the other two.

The results for Aim 1, combined with the acceptable alpha coefficients for the individual ASTEQ-2 factors, provide strong evidence that for this population, (a) different types of traumatic and stressful events do, indeed, cluster together meaningfully, and (b) these groups are better conceptualized as clustering by the *type* of event rather than by the *severity* of the event. These conclusions are not without support in the literature. For example, various authors have argued that youths from high-risk environments are frequently exposed to a wide range of stressors of varying degrees, and

that severe traumatic events often cannot be conceptualized as qualitatively separate from the contexts of the environmental stress from which they arise (Briere & Elliot, 1997; Garbarino, 2001). In addition, many authors, as cited above, have separately evaluated the effects of certain *types* of traumas on psychological and behavioral outcomes. Still, it bears noting that the CFA model for clustering by severity was not dramatically inferior, and many of its results were within acceptable limits. While the two models' numerical results cannot be exactly compared to one another as run given the constraints of SEM, they do demonstrate many similarities. Overall, it may be best to best conceptualize event clustering by type as an alternative, and possibly superior, approach to understanding the occurrence of traumatic and stressful events in incarcerated youths.

The most noteworthy result from the series of hierarchical regressions conducted with simultaneous entry of all three ASTEQ-2 factors is that the portion of variance accounted for by Loss exposure became non-significant for all five TSC-C and all three SIDES-A outcomes, after controlling for the other two ASTEQ-2 factors. This resulted in a rejection of Hypothesis 4, which suggested that ASTEQ-2 Loss would account for a significant portion of variance in Depression and Anxiety over and above the other ASTEQ-2 factors, as ASTEQ-2 Loss accounted for less variance independently. However, for three outcomes (TSC-C Anger, TSC-C Dissociation, & SIDES-A Sustaining Beliefs), ASTEQ-2 Loss did account for 5-7% of the variance after accounting for demographic effects, a modest effect size by traditional standards (Cohen & Cohen, 1983). Yet, even in these outcomes, at least 89% of the variance explained by ASTEQ-2 Loss was shared with other factors (see Table 10). Compared to ASTEQ-2 Community Violence and Interpersonal factors, ASTEQ-2 Loss not only explained far less variance

independently, but shared much more of its explained variance with the other ASTEQ-2 factors. This finding provides further support of the above-cited cross-sectional and longitudinal research suggesting that the construct of Loss does not consistently predict specific psychological outcomes, and its predictive ability has been at least partially dependent upon the effects of other factors (Franco et al., 2004; Kessler & Kendler, 1997).

A second result almost as striking is the robust predictive ability of the ASTEQ-2 Interpersonal factor across nearly all outcomes, which continued to account for statistically significant unique portions of variance in all eight final regression models, thus supporting Hypothesis 2. This was especially true for the TSC-C Depression and TSC-C Posttraumatic Stress subscales, for which ASTEQ-2 Interpersonal exposure accounted for nearly 14% of the variance in both outcomes over and above all other factors in the final model. In fact, the other ASTEQ-2 factors (Loss and Community Violence) together only account for one-tenth of one percent of unique variance in TSC-C Depression. This is particularly noteworthy given that the constructs of both loss and community violence have been shown to predict depression in previous studies. The results are not dramatically different for the TSC-C Posttraumatic Stress scale; although the ASTEQ-2 Community Violence factor shows a trend towards explaining a unique portion of variance, the absolute portion accounted for is only 1.6%.

Finally, for two additional outcomes (TSC-C Anxiety and SIDES-A Inability to Trust), the ASTEQ-2 Interpersonal factor accounts for at least twice as much variance than either of the other two subscales. In general, the robustness of the Interpersonal factor may speak to the impact and importance of these youths' interpersonal

relationships on their psychosocial functioning. Especially for youths that may already feel marginalized by their ethnicity, traumatic experiences, and/or socioeconomic status, healthy interpersonal relationships may hold the key, for better or for worse, in these youths' lives. In support of this tenet, relationships between family members is believed to play a key role in both the development and maintenance of emotional and behavioral dysregulation for children and adolescents (Miller, Glinski, Woodberry, Mitchell, & Indik, 2002; Rogosch & Cicchetti, 2005), and similar research has shown that psychotherapy designed to reduce emotional dysregulation has been successful with incarcerated juvenile offenders (Trupin, Stewart, Beach, & Boesky, 2002). Additionally, many studies have focused on the impact of community violence exposure on youths from dangerous environments, with important results similar to those found here. However, the robustness of the Interpersonal factor, as compared to the Community Violence factor suggests that, even for these youths from neighborhoods rife with high levels of violence and physical trauma exposure, it is the interpersonal experiences that may, in part, help to shape these youths' outcomes.

Moderation effects were also detected. First, the ASTEQ-2 Interpersonal Exposure factor had a greater effect on SIDES-A Inability to Trust on older youths than younger youths. It is possible that events characterized by interpersonal difficulties do not meaningfully disrupt a youth's ability to trust until that youth enters mid-adolescence; more specifically, as adolescents develop, their cognitive ability advances and allows them to conceptualize/make sense of their past interpersonal experiences in new ways, possibly resulting in a more guarded or protective response to initiating and engaging in relationships. Another potential explanation for the detected interaction effect is that at

younger ages, adolescents may still be quite open to giving and receiving overt displays of affection, and to receiving emotional support from others. This could possibly be due to less exposure to severely delinquent and "hardened" peers, particularly those in the juvenile justice system, and to particular care that facility staff may give to younger youths. Thus, the peer modeling that younger offenders receive as they age in the juvenile justice system may serve to disconnect them from themselves and others around them, eroding the buffer of the emotional connection with others and ultimately allow the effects of past interpersonal stress to manifest in the form of disrupted levels of trust. Third, a simpler interpretation of this interaction is that a confound exists in the current study. Specifically, the study did not assess the extent to which being exposed to other delinquent peers and their strong negative influences is a stressful event, or set of events, in itself for these youths. Given this population in particular, delinquent peer groups with which these youths are nearly always associated are likely to model untrustworthy behavior quite frequently. As youths age, then, it would be expected that continued exposure to modeling of untrustworthy behavior would result in overall decreased levels of trust.

The second interaction effect implies that the ASTEQ-2 Loss factor was associated with higher disruptions in SIDES-A Sustaining Beliefs for Caucasians, but not for African-Americans. It is possible that this result stems partially from the internalized societal expectations of what it means for African-American youths to have experiences of loss. By the time African-American youths reach adolescence, it is likely that they are well aware of many of the stereotypes that are maintained by a society still dominated by a Caucasian worldview. The effect of internalized and institutional racism (Jones, 2000;

Plous, 2003) is one mechanism through which the current finding may be operating. The ASTEQ-2 Loss factor includes items such as "Has a parent, caregiver, or brother or sister ever been placed outside the home, like jail, detention, or foster care?" and "Has anyone in your family ever gotten really drunk or out of control from using alcohol or drugs?" Stereotyped expectations of African-American youths as having family members abusing drugs, jailed, and otherwise unavailable in these youths' lives may be consistent with these youths' internalized views of their world and their futures. As such, having these loss experiences occur in their lives may not have as dramatic an effect on their systems of belief about the world, as it does for Caucasian teenagers. Thus, while these loss experiences are occurring at similar rates for Caucasian youths in this sample, they may be discordant with the Caucasian youths' internalized societal expectations for their lives. This is not to say that the African-American youths in this sample should be viewed as "unaffected" by loss experiences generally, given that loss was shown to account for unique variance directly in separate regression models, nor should internalized racism be interpreted as somehow buffering against negative outcomes. Instead, it is more likely that the *meaning* of loss experiences (possibly due to internalized racist views) leads to different negative outcomes for these African-American youths – outcomes that may not have been accounted for in the current study.

Given these results suggesting that a substantial portion of explained variance in an outcome by certain types of traumatic events may be shared with other types of traumatic events, it is important to consider the possible meaning(s) of the unique and shared proportions of variance. For instance, with the ASTEQ-2 Loss factor as an example, it is possible that ASTEQ-2 Community Violence and/or ASTEQ-2

Interpersonal exposure may *mediate* its relationship with the various psychosocial outcomes in this study to varying degrees. Statistically, the pattern of analyses conducted and discussed above is no different than conducting a test for mediation, in which the hypothesized mediator is entered simultaneously with the predictor after having established a baseline relationship between the predictor and outcome, and examining the magnitude of the reduction in the unique variance accounted for by the predictor (Baron & Kenny, 1986). Higher levels of loss, for example, could be expected to result in disruptions in relationships, which lead to higher levels of interpersonal stress experiences, which, in turn, more directly affects psychosocial functioning.

This pattern, with interpersonal stress experiences mediating other types of exposure, may be particularly appropriate for conceptualizing the lives of incarcerated youths, as well as other youths from high-risk environments. Most of the youths in the current study live in environments that are rife with stressors that are not directly interpersonal in nature, only some of which were sufficiently evaluated in the current study. Stressors such as loss, violence, poverty, transportation difficulties, poor health care and education, and continued "glass-ceiling" effects, particularly for many low-income youths and families of color in the southeast, are the norm for the majority of youths in this study. Tentative statistical support for a "glass-ceiling" effect was demonstrated in the current study. Specifically, it was found that, for this sample of incarcerated youths, African-American youths' mothers graduated high school at *higher* rates than Caucasian youths' mothers. One interpretation of this result is that higher familial educational achievement is less likely to result in positive social outcomes (such as non-incarceration) for African-American youths as compared to Caucasian youths.

It is only natural, then, to imagine that interpersonal stressors might be more highly associated with these "ecological burdens." When combined with any other interpersonal stressors already existent in these youths' relationships (such as mental illness and substance abuse problems that may be at least partially due to a biological etiology), it becomes more reasonable to expect high rates of psychosocial dysfunction as a result. In fact, other conceptual frameworks for these youths, such as those that evaluate the effects of traumatic events with no consideration for the accompanying myriad of environmental stressors, may be risking an inappropriate overlay of a middle and upper-class, Euro-centric framework onto the ecology of low-income, predominantly ethnic minority neighborhoods that other authors have termed "urban war zones" (Garbarino, Kostelny, & Dubro, 1991).

A second conceptualization of this shared variance is that it represents the way that each individual predictor may, over time, contribute to the increase in the other, in a cyclical process of increasing trauma and stress. This alternative conceptualization takes into account the correlational methodology of the current study, and acknowledges that different types of stressful events can cause not only psychological outcomes, but each other as well, over time. It is also consistent with the "accumulation of risk" model posited by other authors (e.g. Garbarino, 2001) with regard to trauma and stress exposure, which suggests that risk for psychosocial dysfunction increases linearly with increases in the number of environmental stressors. This "accumulation of risk" model is also well supported by the current study through the finding that exposure accounted for a high percentage of variance in all eight outcomes. Specifically, total combined proportions of outcome variance accounted for by predictor and interaction terms ranged from 12%

(SIDES-A Inability to Trust) to over 22% (TSC-C Posttraumatic Stress). In fact, the idea of a cyclical process, with exposure of one kind fueling exposure to another and so on, could be conceptualized as simply one way that the accumulation of risk model may actually manifest in the lives of youths from particularly high-risk environments. Additionally, it may be more realistic than the idea of a unidirectional, "mediation" model, in that it represents the idea that many different, individual "mediations" are occurring, both simultaneously and over time.

Moreover, the fact that these subscales were shown to be strongly and linearly associated with various self-reported psychosocial difficulties provides further evidence that the DSM-IV's current conceptualization of what constitutes a "threshold" for eligibility for a diagnosis of PTSD may be inappropriate for certain populations, such as incarcerated youths. With regard to clustering of symptoms of psychosocial difficulties, other authors have already posited in general that for high-risk children and adolescents, current conceptualizations of individual diagnostic categories as truly "discrete" from other disorders may be inappropriate (Tolan & Henry, 1996). The current study further supports this finding in several ways. First, it suggests that a wide range of potentially traumatic and stressful experiences appear to contribute to psychological dysfunction to some degree, and in a linear fashion. Second, it posits that specific types of environmental stress appear to more strongly predict certain psychological outcomes as compared to others, and that these relationships are sometimes moderated by the youths' gender and ethnicity. These outcomes include, but are not restricted to, the DSM-IV symptom criteria for PTSD, and also include outcomes that are more closely aligned with measures of personality and/or a schema-focused framework than subjective distress.

Third, evaluating a person's level of psychosocial dysfunction solely on the basis of individual events has less predictive validity than a more comprehensive evaluation of a range of environmental stressors of varying severity and chronicity for this population of youths experiencing high rates of stress exposure and psychosocial dysfunction. Further evidence supporting this stance can be found in the fact that, of the fourteen items comprising the ASTEQ-2 Interpersonal factor (the most robust of the three ASTEQ-2 factors), only five met DSM criteria as a "traumatic" event, and only one of these five items (victim of physical abuse) had one of the top five highest factor loadings on that scale. While six of the eight ASTEQ-2 Community Violence items did meet DSM criteria, the CV factor appeared to be less robust and demonstrate less consistent predictive ability across all outcomes. Additionally, only one of the six ASTEQ-2 Loss items (death of a family member or friend) met DSM-IV criteria, and it was the lowest loading factor on that scale.

It must be noted that this pattern of results is likely different for different populations, a hypothesis that was partially supported in the current study by the moderation of certain relationships by age, gender, and ethnicity. However, this very fact underscores the limitations of applying a set of universal criteria to all populations. It is worth reiterating here that the notion of a circumscribed, severe "trauma" occurring separately, with little to no accompanying environmental stressors contributing to psychosocial dysfunction, is a rare occurrence in the real world and is difficult to imagine in the lives of the youths in this study. Anecdotally, a substantial portion of youths reported that the worst thing to have ever happened to them was to be incarcerated (while others reported that it was the best); others would report that the death or loss of a pet

(clearly falling in the "stressor" category) was substantially more difficult psychologically than losing friends to gunfire. These and many other stories like them, encountered over the course of this study, run counter to the assumptions underlying the DSM-IV's current PTSD framework. With the growing recognition in psychology of the myriad of ways that culture and environmental context can affect psychosocial functioning, it is imperative that future work in the field examine these questions more thoroughly with regard to how we evaluate trauma and stress and treat its sequelae, in populations that continue to be underserved and under-incorporated into our conceptualizations of what constitutes psychological dysfunction.

An Emerging Clinical Picture of the Study Population

Youths in the current study have reported having experienced large rates of exposure to a wide range of potentially traumatic and stressful events. Overall, these events are strongly associated with their current self-reported rates of psychological distress and behavioral dysregulation. Beyond these results, however, a different and possibly more concerning pattern emerges. The majority of these youths are at a developmental stage (mid-adolescence) in which they are just beginning to think about themselves and how they fit into the world. They are beginning to develop a more individualized sense of identity, as their past experiences begin to shape who they are and who they believe they can be. As with most other adolescents, they are just learning how to conceptualize their futures - professional, relational, societal - in an abstract way. This increasing level of abstraction serves as a foundation for the development of other abstract constructs, such as hope, trust, and meaning, that affect the decisions that all adolescents and adults will make for the rest of their lives.

But for these youths, positive development of these higher-order constructs is in some way being thwarted. The majority in this study report that they distrust others, struggle with finding meaning in life, cannot see any positive ways that they have made a difference to others or the world around them, and have difficulty seeing the world as a fair and just place. They act in behaviorally risky ways that endanger themselves and, likely, those around them as well – no surprise for those who believe their lives have little meaning, or that they contribute little to the world in which they live. Anecdotally, many youths during the study also reported that their educational systems are virtually nonexistent while incarcerated (e.g. "I just sleep in class most of the day."), which many youths may interpret as meaning that they are incapable of learning, or worse, beyond hope of rehabilitation more generally. In addition, it is worth reiterating that the majority of mothers of African-American youths in the sample have graduated high school, and done so at a higher rate than Caucasian mothers, suggesting that other, more subtle factors may be at play that are negating any positive effects that would be expected of caregivers' higher educational achievement for African-American youths. Even through these educational factors alone, one can see how the ecologies of the lives of the youths in the current study is pervaded by a reduced sense of autonomy, hope, and meaning. Further, it is conceivable that the more traditional psychological "symptoms" tested here (i.e. depression, anxiety, etc.) may be manifestations of such hopeless yet realistic worldviews, which, in turn, derive from the perilous ecologies in which they live.

Limitations and Future Directions for Research

In sum, it can be seen that the results of the current study may have important theoretical, methodological, and clinical implications for the understanding and treatment

of youths from high-risk environments, particularly incarcerated youths of color. However, there are several limitations to this study that must be noted when considering the overall meaning and utility of these results. First and foremost, this study is a correlational design, and any direct suggestion of a causal relationship is inappropriate on theoretical grounds. To a modest extent, causal inferences are reasonable given that youths are asked about lifetime traumatic experiences that are necessarily in the past, and they are reporting on psychological states that are likely to be judged based on current subjective states. However, these are not so easily separated as this, because it is highly likely that each youths' set of negative life stressors will have been impacted at some point by his or her own behavioral choices that are made based in part on psychological functioning. Further, the SIDES-A outcomes, in particular, were asked in the context of reporting about how true certain items were over the lifetime, which necessarily confounds any attempts to assume a purely linear event-response pattern. This is but one example of why drawing causal inferences from the current study is risky at best, and calls for more longitudinal studies to tease apart these complex relationships.

A second limitation is the extent to which youths who globally over or under-report for various reasons across all scales could artificially inflate the associations between ASTEQ-2 factors and outcomes. While this is a possibility, subjective reports from RAs suggest that the vast majority of youths appeared to answer honestly to most questions, and the measure that appeared to be answered most honestly was the ASTEQ-2. This may have been due in part to the "objective" nature of the questions and the methodology selected, which may have circumvented any defensiveness to some extent. Still, it must be acknowledged that no measures included in the current study were

reverse-coded, and thus the overall procedure is vulnerable to global over and underreporting.

Third, it should be noted that there are inherent limitations with using normed scores, as was done with the five TSC-C subscales. The original goal in using normed scores was to reduce the number of covariates (i.e., age and gender) in regression equations and thereby simplify the models while still accounting for variation that could be attributed to those demographic variables. However, the accuracy of the normed scores is dependent upon the extent to which the sample used to norm the instrument is representative of the current sample. Means and standard deviations for T-scores as reported in Table 2 are not substantially different from the scores of the norming sample (Briere, 1996), and the TSC-C was normed using a large and diverse sample of children and adolescents, including a substantial portion of youths from high-risk and low income environments. However, the ethnic breakdown in the current sample is more heavily weighted towards African-Americans than the norming sample of the TSC-C, and this fact in itself may bring the validity of the normed scores into question.

A second concern with the use of normed scores is that it removed the possibility of testing whether age and gender moderated the effects of the ASTEQ-2 factors on the TSC-C outcomes, because the variance accounted for age and gender was already inherently controlled for. While the main goal of the current study was not to examine the moderation effects of demographic variables, moderation effects were found in the SIDES-A subscales (for which only raw scores were used), and it is therefore reasonable to conclude that moderation effects may have been missed through the use of normed scores. Indeed, research has already provided evidence for the notion that gender

moderates the relationship between certain types of community violence exposure and some TSC-C subscales in a similar population of youths using raw scores (Foster et al., 2004). As such, any future research with the data collected in the current study that examines moderation in more detail should use TSC-C raw scores.

Fourth, the risk of Type I error must be recognized. For example, 66 moderation analyses were conducted, and of those, only two were statistically significant in their respective final regression models. Based on α=.05, this is no more than we would expect to find by chance alone. A total of 32 other separate regressions were conducted as well. As such, it is advisable not to over-interpret any one result in the current study, particularly those that are less robust. Still, the consistency with which the results parallel prior research, combined with a pattern of significant effects across a variety of IVs and DVs, suggest that Type I error is playing no more than a minor role in the current findings.

Fifth, care must be taken not to over-generalize these results. While the pattern of results was consistent with past research on a variety of youth samples from high-risk and dangerous environments, incarcerated youths (of which 80% of the current sample are in long-term placements and 77% are youths of color) are a unique group. One natural limitation in this regard is that well-executed studies - those that successfully reduce defensiveness in youths and develop a working rapport sufficient for gathering internally-valid results – may find stronger associations between stressors and psychosocial functioning in this population as compared to others. This group likely has diminished psychological resources, underdeveloped coping skills, and even higher lifetime rates of stressful events than other populations of youths from dangerous environments. This

combination of factors, along with unidentified others, may make them particularly vulnerable to the psychological effects of exposure to stressful life events than other adolescent groups. That is, other factors that may mitigate the effects of trauma and stress exposure on psychological functioning in other youth populations may not exist to the same extent for incarcerated youths. As such, these results should be considered only as a starting point from which to begin to evaluate the extent to which the conclusions drawn here do generalize to other youth populations.

Sixth, the staff at each detention center where the data was gathered for the current study prohibited the involvement of particular participants, specifically those with severe behavior difficulties, low cognitive functioning, and psychotic behavior. As a result, the generalizability of the current results to groups of adolescents with any of the aforementioned characteristics is limited.

Seventh, it is important to note that research assistant (RA) and participant were not matched for gender, nor were the different possible gender dyads controlled for. It is possible that certain RA-participant gender pairings resulted in different levels of disclosure with regard to both exposure and outcome measures. Similar research in the future should take steps to minimize these potential effects.

Finally, there is a growing importance in the field of psychology to address the ways that psychological research is, and is not, conducted in a multiculturally competent, ethical manner. To this end, the current study can be evaluated according to the American Psychological Association's (2002) guidelines for multiculturally competent research (pp. 36-43). The current study evidences several strengths consistent with these guidelines.

(1) The study's population of focus is incarcerated youths, who are also predominantly low-income youths of color, a severely under-researched population relative to the research that has been conducted on other groups. Further, this study does not attempt to generalize these findings beyond similar populations of youths.

(2) Comparisons are not being made to other groups (such as middle-class Caucasian youths) as if these groups should be comparative "references" for what does or does not constitute psychological dysfunction. On the contrary, this study brings into question the assumed universality of the field's working framework for what constitutes trauma, stress, and psychosocial dysfunction, and instead suggests that this framework may not be appropriate for certain populations of children and adolescents.

(3) The current study challenges the working assumption that trauma and stress are ecologically distinct in this population with a competing model that was derived through research with this population, rather than overlaid upon it.

(4) The program of research from which the current study emerged is one dedicated to the direct benefit of the underserved population being studied, rather than for the benefit of other, more dominant groups.

(5) Several types of safeguards were implemented to minimize the exploitation of the youths, who are at extremely high risk for this occurrence.

(6) Moderation analyses were conducted to determine whether the pattern of results differed for different ethnic categories. Results of significant analyses were interpreted meaningfully and with attention to the potential ecological factors that may be different for each ethnic group.

(7) Development of the ASTEQ-2 included many stakeholders that work directly with marginalized youths, including direct care staff from juvenile justice facilities, as well as those with expertise in the area of multicultural competence and persons of color. In general, attempts were made to design an instrument, and to implement a more participant-centered data collection methodology, less grounded in a Caucasian (and thus ethnocentric) approach to research.

This study also demonstrated several shortcomings in the area of multicultural competent research, however:

(1) A convenience sample was used that resulted in extremely low numbers of certain ethnic groups. As such, the study did exploit those youths (e.g. Latino, Asian, and Mixed-ethnic youths) for the purposes of gaining statistical power, because there were insufficient numbers of these groups to make meaningful conclusions or to create separate norms for the ASTEQ-2, particularly with regard to different ethnic groups.

(2) While RAs did allow the youths to self-identify their ethnicity, no other measures of acculturation were gathered that could have provided a better estimate of ethnicity's effects.

(3) Despite the attempts described above to lessen the ethnocentricity of the measure's development and the data collection methodology, neither youths nor community representatives of the youths sampled were explicitly solicited for help with scale development, or with the research process. Additionally, the RAs, while close in age to the youths (generally undergraduate or graduate students 20-25 years of age), were predominantly Caucasian (approximately two-thirds) with very few identifying as African-American.

In summary, future studies need to continue to test the extent to which these and other results do or do not apply to various ethnicities. Despite the fact that interaction effects were run to test these patterns (and one was found significant), all ethnicities are not equally represented and, thus, interaction effects may be underestimated. Additionally, given that the current sample is comprised of predominantly African-American and other youths of color, these results may not pertain to youths of all ethnicities. Further, they may not even generalize to other low-income African-American youths (such as those living in areas with better educational systems, for example, or areas of the country). To this end, it would be better to conceptualize these results as quite tentative, and best generalized only to youths of color and low socioeconomic status living in areas that place them at high risk for exposure to a variety of potentially traumatic and stressful events and negative psychosocial outcomes, including incarceration. Additionally, it may be of value to consider the ways that qualitative research could augment the findings discussed here, and provide a guide for both future quantitative research and clinical work on the subject of trauma, stress, and dysfunction in marginalized youths. As one example, the concepts of meaning, hope, sustaining beliefs, and trust could be better understood through in-depth, qualitative studies with this population. From a quantitative research perspective, this process could provide a deeper understanding of how these youths interpret their experiences of trauma and stress for development of better research measures. From a clinical perspective, qualitative research could provide deeper insights into how youths process, withstand, and suffer from the intense and chronic negative life events to which they are exposed, leading to more informed clinical interventions. Regardless of the type of research conducted,

however, future research with this and similar vulnerable youth populations must use extra care to minimize the exploitation of their participants, especially given the multiple ways that they have already been marginalized from mainstream society.

More broadly, it is hoped that this study highlights the importance of using comprehensive measures of trauma and stress exposure in both research and clinical capacities. For example, the current study suggests that community violence is associated with a wide range of psychosocial outcomes, but that the effect sizes of these relationships vary, sometimes substantially. In addition, it has found evidence that, in many of the prior studies listed above, much of the variance attributed solely to a single traumatic exposure predictor may not have been fully unique to that predictor. In fact, in some cases (particularly for the Loss-type negative life events), virtually none of that variance may be *uniquely* attributable to that outcome. Thus, many of the current empirical results in the literature on trauma exposure (such as those that argue that specific types of traumas and stressors predict various psychosocial outcomes) are likely accurate to some meaningful degree. However, to the extent that they do not account for other types of negative life experiences in the same model, they may often be overestimating the unique association between specific exposure events and various outcomes.

Clinical Implications

The results discussed above also have several clinical implications. For example, it may be helpful for mental health treatment providers to understand the extent to which interpersonal stressors uniquely predict levels of anxiety, depression, and post-traumatic stress (PTS). This is of particular relevance with regard to PTS symptoms. Many

clinicians may assume that PTS symptoms stem from traumatic exposure to community violence events. While this theory was not proven to be incorrect in the current study, the current results do suggest that interpersonal stressors account for much higher levels of self-reported PTS symptoms in this population. An even more striking finding was the extent to which the ASTEQ-2 Interpersonal factor accounted for virtually all the explained variance in TSC-C Depression. It may be that youths' depressive symptoms are not a direct result of experiences characterized by community violence and loss, but that these experiences contribute to higher levels of Interpersonal stress; it is the subsequent disruption of these relational attachments that is associated with the resulting depressive symptoms. As discussed above, this conceptual mediational model is consistent with the statistical procedures conducted in the present study, and if true, suggest strongly that any mental health treatment should consider issues pertaining to interpersonal relationships before addressing other causes of dysfunction, particularly for youths with high levels of internalizing symptoms.

Another further interpretation of the pattern of data described here with regard to the ASTEQ-2 Community Violence factor is that, when exposed to high levels of community violence from a young age and over a long period of time (as most of the youths in this sample have been), youths become desensitized, rather than developing increased sensitivity associated with traditional posttraumatic symptoms. The tradeoff, however, may be a global reduction in affect and attention that is consistent with dissociative symptoms – an explanation strongly supported in the current study. In fact, despite ASTEQ-2 Interpersonal factor's robust explanatory power, ASTEQ-2

Community Violence actually accounted for more unique variance in TSC-C Dissociation than did the ASTEQ-2 Interpersonal factor.

It is also clinically relevant to note that ASTEQ-2 Loss provided no unique explanatory power for any of the wide range of outcomes included here. As discussed above, it is feasible to consider the possibility that ASTEQ-2 Loss's relation to these outcomes is being mediated by the other exposure factors. However, even if this is true, ASTEQ-2 Loss effect sizes were substantially smaller, even in the independent regression models. It is possible that, in some ways, the ASTEQ-2 Loss items comprising the measure here are simply more obvious manifestations of loss that is inherent in the other types of exposure. For example, one of the highest-loading items on the Loss scale was, "Has a family member or caregiver ever gotten really drunk or out of control from using alcohol or drugs?" This item reflects emotional, rather than physical, loss – loss of a relationship. And while it may occur more frequently around other "loss" items than ASTEQ-2 Community Violence or Interpersonal items, the type of relational loss it represents conceptually occurs quite frequently within the contexts of Community Violence and Interpersonal stressors – friends are killed, youths are rejected by other kids, placed in foster care (and juvenile detention), and so on. In this sense, then, while the items loading on the Loss factor may *occur* together, their psychological *impact* may not be as conceptually separate and, as such, their effects would be shared with the effects of the other ASTEQ-2 factors.

Conclusion

This study provides new insights into the ways that negative life events may be conceptualized in youths at high risk for and/or experiencing negative psychosocial

outcomes, and synthesizes a variety of research examining the relationships between various types of trauma and stress exposure and specific outcomes. A particularly strong contribution to the field is the confirmation of a factor structure suggesting that traumatic and stressful events may be thought of as co-occurring on the basis of event *type*, rather than by event *severity*; this approach has implications not only for the value of the DSM-IV (American Psychological Association, 1994), but also underscores the continuing need to re-examine established psychological theories and research methodologies with regard to their multicultural relevance and utility. It also provides evidence that accounting for the variation explained by many types of negative life events is an important methodological approach that adds substantial clarity to our theoretical and clinical understanding about the relationship between these events, and a range of psychological outcomes in these youths. More generally, studies that directly address clinically important questions are necessary if we are going to progress in our theoretical understanding and clinical treatment efficacy for youths that are traditionally underserved by, yet in the highest need for, innovative and efficacious mental health service provision.

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