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# THE INTERACTION BETWEEN PERSONALITY TRAITS AND CONTEXTUAL DISADVANTAGE ON CRIMINAL BEHAVIOR: A LONGITUDINAL STUDY OF HIGH RISK-FEMALES

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Abstract of Dissertation

Lauren C. Gudonis

The Graduate School  
University of Kentucky  
2009

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DISADVANTAGE ON CRIMINAL BEHAVIOR: A LONGITUDINAL STUDY OF  
HIGH RISK-FEMALES

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ABSTRACT OF DISSERTATION

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A dissertation submitted in partial fulfillment of the  
requirements for the degree of Doctor of Philosophy in the  
College of Arts and Sciences  
at the University of Kentucky

By  
Lauren C. Gudonis

Lexington, Kentucky

Director: Dr. Peter R. Giancola, Professor of Psychology

Lexington, Kentucky

2009

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## ABSTRACT OF DISSERTATION

### THE INTERACTION BETWEEN PERSONALITY TRAITS AND CONTEXTUAL DISADVANTAGE ON CRIMINAL BEHAVIOR: A LONGITUDINAL STUDY OF HIGH RISK-FEMALES

This investigation examined several dimensions of personality functioning in a longitudinal sample of females. These data are part of an existing project evaluating female development across 3 different time points starting in adolescence and transitioning into adulthood. Subjects were categorized into a clinical group (females with a high degree of psychiatric comorbidity) and a normal control group. All participants were initially recruited when they were between 14-18 years of age, and were followed up twice when they were 19-23, and 24-28. In an attempt to explore possible heterogeneity in personality trait development, the research is presented as three separate studies examining the following: (1) fluctuations in mean-level and rank order stability estimates across time; (2) the validity of established personality trends relative to their association with antisocial behavior; and (3) mechanisms that may contribute to personality trait consistency across development such as neighborhood context. This is the first study to investigate personality functioning across time in females who are disturbed in multiple areas of social and psychological functioning. Results highlight the importance of considering distinct subgroups of the general population when exploring developmental trends in personality.

Keywords: Personality functioning, psychiatric comorbidity, traits, development, longitudinal

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July 6, 2009  
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DISSERTATION

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*To my parents who truly instilled in me an appreciation for knowledge and a spirit of intellectual curiosity. To Peter, for adopting me as your graduate student and treating me as your own. To Karen, for your friendship, sound advice, and never letting me give up.  
To Drew, for your constant love, support, and encouragement.*

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## Section One: Introduction

Personality is defined as characteristic ways of thinking, feeling, or behaving. In trying to define the concept, some suggest that personality traits are immutable dispositions that are remarkably stable and consistent across time (McCrae & Costa, 1996; McCrae et al., 2000). From this perspective, personality traits are considered static biological dispositions, described by some as being “set like plaster” (*see* Costa & McCrae, 1994; William James, 1950). In contrast, other theorists suggest personality is a dynamic organization that “doesn’t just lie there, but is active, with processes of some sort” (Carver & Scheier, 2004, p. 5). Within this framework, personality traits are multiply determined, multifaceted, and transactional, exhibiting significant change across the lifespan (Helson, Jones, & Kwan, 2002; Srivastava, Oliver, Gosling, & Potter, 2003).

More recently, it has been hypothesized that both sides of the argument are valid; personality can exhibit both change and stability across time (Roberts & Caspi, 2003). Caspi and colleagues contend that individuals are active agents in choosing and shaping their environments, and environments in return affect personality traits (Caspi, Roberts, & Shiner, 2005; Caspi & Moffitt, 1993). From this perspective, the “plastic” vs. “plaster” theories would compliment, rather than contradict, each other, as each provides key insights into the subtle ways personality changes and stabilizes over time. Further, Caspi et al. (2005) argue that person-environment interactions may be greatest during the transition from adolescence to adulthood due to the unique developmental challenges young people face as they adapt to adult roles and responsibilities (Blonigen, Carlson, Hicks, Krueger, & Iacono, 2006; Roberts, Caspi, & Moffitt, 2001; Ullman & Newcomb, 1999), suggesting that a more complete understanding of the stability (vs. instability) of personality will come from studies that look at this important transitional period of life.

Recently, several noteworthy longitudinal studies have made rapid progress and interesting discoveries while attempting to settle the debate of personality stability vs. instability (e.g. Roberts, Caspi, & Moffitt, 2001; Roberts, Walton, & Viechtbauer, 2006; Robins, Fraley, Roberts, & Trzesniewski, 2001). However, despite the comprehensive nature of these studies, several important questions remain. Specifically, studies to date have been unable to: 1) determine whether “normal” developmental trends in personality can be generalized to certain subgroups within the population; 2) examine the existence of non-linear developmental trends; 3) examine if trends in personality are associated with theoretically relevant behavioral outcomes; and 4) identify possible person-environment interactions across development. Exploration of each of these areas is necessary to expand understanding of personality fluctuations across time.

### *Generalizability of Developmental Trends in Personality*

A variety of different analytical methods exist to examine personality fluctuations across time. The most frequently measured domain is mean-level change, which refers to fluctuations in the amount of a specific trait over time, which indicates whether the sample or population as a whole is increasing or decreasing on some measured personality domain (Robins, Fraley, Roberts, & Trzesniewski, 2001). In the past decade, numerous studies of mean-level changes in personality traits have emerged; all of which suggest a set of specific trends in normal personality development (Roberts, Walton, & Viechtbauer, 2006; Robins, Fraley, Roberts, & Trzesniewski, 2001; Srivastava, Oliver, & Gosling, 2002). The bulk of these studies have focused primarily on measures specifically designed to assess the “Big Five” dimensions of personality functioning:

Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience (Goldberg, 1993; Costa & McCrae, 1994).

In a recent meta-analysis of 92 longitudinal studies on trait development, Roberts, Walton, and Viechtbauer (2006) found that people become more socially dominant (a facet of Extraversion), increase in Conscientiousness, and become more emotionally stable (decrease in Neuroticism) as they progress from adolescence to young adulthood. Similarly, a recent qualitative review of normative changes in personality suggested that from adolescence to young adulthood, individuals became more agreeable, conscientious, emotionally stable, and open to new experiences (Robins, Fraley, Roberts, & Trzesniewski, 2001). Finally, in perhaps the largest sample to date (N = 132,515), findings were replicated except within the domain of Neuroticism which declined among women across time, but did not change among men (Srivastava, Oliver, Gosling, & Potter, 2003).

Drawing on other measures of personality functioning, similar findings emerge. For example, studies utilizing Tellegan's (1982) three-factor model of personality, as assessed by the Multidimensional Personality Questionnaire (MPQ), show a general decrease in the factor of Negative Emotionality (hostility, antagonism, and aggression), general increases in Positive Emotionality (achievement, well-being, social closeness) and increases in levels of Behavioral Constraint (similar to Conscientiousness or Self-Control) (McGue, Bacon, & Lykken, 1993; Roberts & Chapman, 2000; Roberts, Caspi, & Moffitt, 2001). Overall, longitudinal investigations on personality development seem to suggest that across time, people acquire a greater sense of self-discipline, a more realistic outlook on life, greater emotional stability, and increases in the capacity for meaningful interpersonal relationships.

This apparent trend of mean-level increases in emotional stability, conscientiousness, and behavioral control during the progression from adolescence to adulthood has been labeled the "maturity principle" (Caspi et al., 2005). People appear to increase in levels of adaptation towards healthy psychological functioning across time. This overall mean-level trend would suggest a "growing up" of sorts for most adolescents as they engage in normative adult roles such as leaving the family home, investing in romantic relationships, starting career paths, and decreasing their overall dependence in exchange for greater autonomy (Roberts et al., 2001; Robins et al., 2001).

Despite compelling evidence for growth towards psychological maturity, several questions remain. First, longitudinal findings tell us nothing about *group differences* in the observed trends towards greater maturity and psychological stability as it relates to personality functioning. For instance, individuals who do not fall within the realm of "normal personality functioning" may exhibit extreme variation on any given trait, yet the population mean can remain stable. If a small group of individuals score high on the MPQ domain of Constraint, and another subgroup in the population scores low, the two sets of scores will mathematically cancel each other out and the result will be zero mean-level changes. In such cases, any meaningful group differences are masked (Roberts et al., 2001). Therefore, despite research findings that people move in the direction of personality maturity across time, certain subgroups of the general population may in fact be shifting towards opposite ends of trait spectrums, yet are overlooked by reliance on mean-level statistics for entire population samples.

It is likely that population trends do not hold for all individuals, suggesting that very different trajectories may exist. What features characterize personality trajectories for those adolescents who do not pass through this period without disturbances? Although the transition from adolescent to adulthood can be unproblematic for many, a good proportion of youth show *increases* in psychological dysfunction and maladaptive behaviors (Odgers et al., 2008; Farrell, Sullivan, Esposito, & Meyer, 2005) as they enter adulthood. As previously argued by Johnson, Hicks, McGue, and Iacono (2007) the current focus on mean-level changes solely within “normal” population samples poses a serious limitation, and “it is necessary to make some distinctions among individuals in order to capture fully the heterogeneity of personality development” (p. 267).

Another important measure of personality development across time is rank-order stability. Rank-order stability “reflects the degree to which the relative ordering of individuals on a given trait is maintained over time” (Robins et al., pg. 619). Rank-order stability is typically measured by the correlation between scores on a given personality trait across two or more time points, and assesses the relative placement of individuals within a group. If the correlation is high, than this suggests trait consistency is high among individuals. It is important to consider rank-order stability in addition to mean level changes because each provides very different information about how personality may develop over time.

Longitudinal studies of personality change measuring rank-order stability are fewer in number compared to studies measuring mean-order stability. However, Roberts and DelVecchio (2000) conducted a meta-analysis on those existing studies that generate estimates of trait consistency, and found that correlations generally increase in strength from childhood to adulthood, with a plateau occurring after age 50. Meta-analytic estimates showed that rank-order correlations increased from .31 in childhood to .54 during the college years, to .64 at age 30, and then to .74 at age 50. Despite these findings, it is not known whether these rank-order estimates are valid for distinct subgroups of the population. For individuals with significant psychopathology (which often translates to less emotional stability and greater inconsistency across time in psychological make-up), rank-order estimates of certain traits may look quite different compared to normal population samples.

In sum, the major limitation found in longitudinal studies of mean-level and rank-order changes in personality is the reliance on predominantly homogenous populations. Mean-level changes and rank-order stability estimates generated from these population samples focuses primarily on highly educated, middle-class white males. Unfortunately, studies incorporating ethnic minorities, females, or psychiatric populations are still a rarity in the field. Perhaps not surprisingly, in the largest meta-analytic study on personality development to date, Roberts et al. (2006) concluded, “It is clear from our review that many more studies performed on a wider variety of samples are needed before definitive statements can be made concerning the patterns of change for specific traits...” (p. 29).

Diverse samples are necessary to establish the overall generalizability of findings, but they are also of critical importance for theoretical advancement and refinement. While normative theories of personality change have been instrumental in describing normal population trends, their descriptive and predictive value for atypical samples remains unclear. Of particular interest is the application of these theories to the following

sub-populations: 1) females; and 2) individuals with extreme elevations on personality traits that are known correlates of psychopathology (Odgers, Moretti, Burnette, Chauhan, Waite, & Reppucci, 2007).

On average, meta-analytic findings suggest men and women have different personalities (Feingold, 1994). However, only a handful of studies have tested sex differences in the development of personality traits across time, and results suggest both similarities and differences (Johnson et al., 2007; Roberts et al., 2001). Roberts et al. found that although men and women exhibited similar rank-order stability and mean-level changes during the transition from adolescence to adulthood, subtle differences also emerged. Women scored higher than men at ages 18 and 26 on all of the MPQ scales making up Constraint, the Stress Reaction Scale, and the Social Closeness scale. Men scored higher than women at ages 18 and 26 on the Aggression, Alienation, Achievement, Social Potency, and Well Being Scales. Although evidence is preliminary, findings imply differences in personality development across gender, and the need to further explore this possible heterogeneity.

With regard to ‘atypical’ personality profiles (i.e. individuals scoring on the extreme ends of normal personality traits) two recent studies suggest trajectories for these individuals may look very different across time. Blonigen, Hicks, Krueger, Patrick, and Iacono (2006) investigated psychopathic traits of Fearless Dominance (an interpersonal-affective trait) and Impulsive Antisociality (related to social deviance) as measured by the MPQ. Interestingly, individuals who scored highest on levels of Fearless Dominance and Impulsive Antisociality exhibited the greatest change across time relative to individuals with greater emotional stability and behavioral control. Similarly, in a study using a complete birth cohort, Roberts et al. (2001) found that most adolescents evidenced relative stability in personality across time, and appear to become slightly more controlled, more confident, and less angry and alienated as they enter adulthood. However, a small but significant percentage of the sample evidenced opposite trends. Specifically, adolescents with low scores on Constraint (Traditionalism, Harm Avoidance, Self-Control) and Social Closeness, and higher scores on Negative Emotionality (Aggression, Alienation, Stress Reaction) demonstrated a lack of personality consistency across time, and growth in the opposite direction as what the maturity principle would predict.

Results from both these studies suggest that although the majority of individuals in population samples follow stable trends towards psychological maturity and stability across time, a small but significant subgroup of individuals may follow a very different path. Moreover, persons along this off beat path are known to have personality profiles that are known correlates of risky and maladaptive behavior (Johnson et al., 2007). Clearly, a one-size-fits-all approach may alienate those persons with particular personality and behavioral inclinations that have potentially high social costs, and are most in need of environmental intervention.

#### *Inability to Examine Non-Linear Trends*

Another shortcoming in this existing body of literature is a common emphasis on only two waves of data. One reason for this is that early descriptive studies on personality development focused primarily on the broader question of whether personality changes *at all* throughout the lifecourse. As interest in dynamic changes and fluctuation in traits has peaked, static data incorporating measurements solely at Time 1 and Time 2 are no longer sufficient. The major limitation with this methodology is the inability to model

nonlinear (e.g., curvilinear, quadratic) change. This is problematic if patterns of personality change (both at the individual and mean level) are likely to be non-linear and dynamic in nature (e.g. Johnson et al., 2007; Srivastava, John, Gosling, & Potter, 2003). For example, if an individual scores low on Constraint at age 12, increases greatly during the college years, and then drops significantly again by age 30, two-wave datasets measuring personality change at age 12 to age 30 would predict zero change. The trend of positive growth, followed by negative growth, is masked. Clearly, datasets incorporating more than two waves of data are necessary for the precise trajectory of personality change, especially if mean and rank-order statistics maximize and/or stabilize at different periods in the lifecourse.

#### *Personality Development and Associated Outcomes*

To draw clear conclusions about personality development across distinct time points, the validity of these temporal patterns must also be explored. One method of testing the validity of developmental trends in personality is by examining their association with specific behavioral outcomes. Although relations between specific traits and behavioral outcomes have been frequently explored in previous research, studies of this type are primarily cross-sectional in their approach, thereby limiting direct evaluations of the temporal order of variables.

One association that has drawn much attention and is well-documented is the link between antisocial psychopathology and the broad factor of Behavioral Undercontrol [i.e. Low Constraint (CON)] and Negative Emotionality (NEM). NEM is often described as a tendency to experience psychological distress and negative moods, while low CON describes an individual who endorses non-traditional values, is impulsive, and enjoys thrill-seeking. Research suggests NEM and low CON play a prominent etiological role in the development of antisocial psychopathology such as conduct disorder, substance use problems, and general criminality (e.g. Martin, Lynch, Pollock, & Clark, 2000; Cote, Tremblay, Nagin, Zoccolillo, & Vitaro, 2002; Elkins, King, McGue, & Iacono, 2006; Sher & Trull, 1994). Yet relatively few empirical studies have examined the issue of temporal relations between these traits and antisocial behavior across time. Moreover, existing studies linking these two constructs are almost exclusively tested within normative male population samples. Their relevance for females or distinct subgroups of the population has unfortunately received little attention.

One exception is a longitudinal analysis examining the relationship between “temperament variables” related to NEM and CON (neuroticism, impulsivity, and sensation-seeking) and future antisocial behavior in school-attending female adolescents (Romero, Luengo, & Sobral, 2001). The authors found that impulsivity was a small but significant predictor of future antisocial behavior. However, two important limitations exist in this study in terms of generalizability. First, the time between the two assessments was only six months, making conclusions regarding longitudinal effects of personality on antisocial behavior difficult. Second, the females in the study formed a relatively homogenous sample. The authors acknowledged the difficulty in trying to obtain a large sample of institutionalized or delinquent girls, so they included girls only from the normative group, each of whom was currently attending college.

In the only other study to date on longitudinal relations between personality and antisocial behavior among females, Johnson et al. (2007) recently analyzed trait development among a population-based sample of 1,537 girls. The authors characterized

individuals in the sample based on initial levels and rate of change of the following personality traits derived from the MPQ: Well-Being, Stress Reaction, Alienation, Aggression, Control, and Harm Avoidance. Results indicated that girls with the least desirable adult outcomes were those with personality trajectories representing high initial status and failure to decline on Alienation and Aggression, and low initial status and failure to increase on Control. Specifically, unlike girls with the opposite personality trajectories (i.e. decreases in alienation and aggression, and increases in control across time), the females in this group had poorer outcomes on variables measuring education, income, occupational status, adult antisocial behavior, substance dependence, and interpersonal problems. Results suggested personality in an important predictor of negative life outcomes, including antisocial behavior, at least for females with an initial unfavorable personality trait configuration. Despite these findings, two significant limitations of this study should be noted. First, the longitudinal nature of the design was somewhat deceptive; although data consisted of four different time points, no individual in the study was assessed at each time point because the authors combined two different cohorts. While statistical techniques were employed to control for cohort effects, the accuracy, validity, and overall generalizability of the findings remain quite limited. Second, a well-established assumption in the field is the notion that past behavior is the best predictor of future behavior (e.g. Triandis, 1977; Ouelette & Wood, 1998). However, this study did not control for the previous effects of antisocial behavior, making interpretation of the actual strength between personality and antisocial behavior across time difficult. In sum, there still exists a clear need for prospective studies to determine if continuity in antisocial behavior can be explained by continuity in personality traits, especially among female non-normative samples.

#### *Context-Dependent Expression of Personality.*

A final limitation in existing research on personality development is the answer to “why” traits exhibit stability or instability across time. In other words, possible mechanisms of trait consistency must also be explored in prospective studies. Substantial evidence suggests that environmental influences play an important role in personality development, yet such interactions are rarely examined empirically. Additionally, there has been an increasing interest in the joint influence of personality traits and contextual factors in predicting antisocial outcomes and other externalizing behavior problems (e.g., Rhee & Waldman, 2002). Of particular concern is the combination of these factors for females, “...because women, as mothers of future generations, may play a critical role in the intergenerational transmission of poor mental health and social functioning...” (Bardone et al., 1996, p. 12). Numerous contextual factors, such as peer delinquency, low social economic status (SES), neighborhood disadvantage, poor parenting, and educational absence, have all emerged as risk factors for the development of externalizing behavior problems (*see* Kurbrin & Weitzer, 2003; *or* Caspi, Moffitt, & Silva, 1993 *for a more comprehensive review*). In sum, these “contextual disadvantage” factors can be measured, and may affect the direction (increase or decrease) and rate of change in personality traits across time (Johnson et al., 2007).

Few previous studies have directly tested such person-environment interactions in the context of personality development as it relates to externalizing behavior, and to our knowledge, no efforts have been made to look at such relations in female-only samples. Nonetheless, a few studies looking specifically at neighborhood factors have significant

relevance to contextual theories of personality development. First, Lynam et al. (2000) looked at a cross-sectional sample of 12-13 year old boys from inner-city Pittsburg to examine relations between the personality trait of impulsivity (i.e. Constraint), neighborhood context, and antisocial behavior. Results indicated that the effects of impulsivity on juvenile offending were stronger in poorer neighborhoods, signifying a person (impulsivity) x context (neighborhood) interaction. The implication is that personality traits for antisocial behavior are exacerbated in high-risk neighborhoods.

Likewise, findings were recently replicated in a population-based sample of Iowa schoolchildren ages 10-19 (Meier, Slutske, Arndt, Stephan, & Cadoret, 2008). This study examined impulsivity and callous personality traits, and found that the relation between personality and delinquency was greater in neighborhoods low in “collective efficacy” (a criminogenic environment characterized by low informal social control, a lack of effort on behalf of the community to keep residents safe and orderly, and low social cohesion in the neighborhood) (*see* Sampson, Raudenbush, & Earls, 1997). In sum, evidence exists for trait-environment interactions as a possible mechanism behind personality development, but the significance of these interactions for more heterogeneous samples remains unclear.

In conclusion, despite recent advances in understanding personality development during the critical period from early adolescence to young adulthood, significant gaps in the literature remain. First, relatively little is known about heterogeneity in personality development since mean-level trends and rank-order stability estimates cannot be assumed to be influential in the same manner for atypical samples, particularly those that include females or persons with co-occurring psychopathology. Second, longitudinal studies of personality development have also, for the most part, relied on data that evaluates changes in trait levels from one wave of data (Time 1) to the next (Time 2). Dependence on these models prohibits the exploration of interactions among traits across multiple time points, the existence of non-linear developmental trends, and the comparison of mean growth trajectories for different groups of individuals. Third, the predictive validity of traits is rarely explored in longitudinal studies of personality development, despite the availability of behavioral outcomes (i.e. antisocial behavior) with known ties to certain traits. Finally, although evidence points to the existence of significant person-environment interactions, especially for neighborhood context, such interactions are rarely studied simultaneously in longitudinal studies designed to map personality development across time.

#### *The Current Investigation*

The current research attempts to resolve some of the shortcomings reviewed in this literature regarding personality functioning and trait development. Specifically, the investigation was designed to address the following four limitations described in the previous section.

To address the limitations of (1) a lack of generalizability for personality trait trajectories, and (2) the overall inability to study non-linear pathways, participants in the current investigation consisted of a diverse group of females who were part of an existing longitudinal project evaluating bio-psycho-social development across three different time points starting in adolescence and transitioning into adulthood. Subjects were initially recruited when they were between 14-18 years of age, and were followed up twice when they were 19-23, and 24-28. This design provided an excellent opportunity to explore

several dimensions of personality functioning simultaneously in the same sample, and also allowed for the exploration of non-linear trends across the developmental period where trait fluctuation is most anticipated.

In an attempt to address the lack of heterogeneous samples in existing longitudinal work, the current investigation analyzed trait development across two subgroups of the general population: a “control” group of female adolescents, and a “clinical” group of females who were disturbed in multiple areas of social and psychological functioning. To our knowledge, this is the first study to investigate personality development across time in females who exhibit significant psychopathology, including externalizing and internalizing behavior problems. Specifically, the females in the clinical group manifested on average three comorbid psychiatric disorders. Their home environments were typically marked by severe stress, conflict, and disadvantage. Not surprisingly, they also demonstrated a broad array of adjustment problems which encompassed social deviance, school failure, risky sexual practices, unplanned pregnancies, coping difficulties, and interpersonal conflict. In view of the severity and range of adverse childhood antecedents, it is plausible to conclude that this sample comprised in many aspects the most extreme segment of the female adolescent population.

Finally, to address the validity of personality trait trajectories and possible mechanisms of trait consistency, the current investigation included factors with known associations to personality functioning, allowing for a more pure assessment of personality functioning at any given moment in time. In sum, no studies to date have compared multiple aspects of personality functioning prospectively across a control and psychiatric group of female adolescents. The current investigation aimed to address this gap in the literature through the development of three separate studies, each designed to address a specific research question regarding personality functioning. To accomplish this goal, two separate cohorts were analyzed in the current investigation. Study 1 and Study 2 consisted of the same group of females from Cohort 1 assessed across three different time points. All analyses for Study 1 and 2 were therefore longitudinal in nature. Due to limitations of the larger project from which females in this investigation were drawn, the girls in Study 3 were selected from a separate cohort of females assessed 5 years after the original group. These girls were only assessed at one time point, and therefore all analyses for Study 3 were cross-sectional in nature.

*Study 1. Mean-level changes and rank-order stability.* The first study was designed to answer the question “Do females with multiple mental disorders follow the same personality trajectories as normal controls?” Personality was measured across three time points, using Tellegan’s MPQ and incorporating both mean-level and rank-order measures of change. In line with previous research, it was hypothesized that MPQ-Constraint (CON) and MPQ-Positive Emotionality (PEM) would increase across time for the control group. Previous research with the Big Five measure of Neuroticism led to the prediction that MPQ-Negative Emotionality (NEM) would decrease across time. Furthermore, in line with findings from meta-analytic studies (e.g. Roberts & DelVecchio, 2000), trait consistency was predicted to increase from adolescence (Time 1) to adulthood (Time 3). Since very few studies have measured MPQ factors longitudinally among females with psychiatric comorbidity, there was no basis for

forming hypotheses about the expected levels of mean or rank-order changes for the females comprising the clinical group.

*Study 2. Relations between personality and antisocial behavior across time.* The second study was designed to answer the question “Can antisocial behavior establish the validity of personality trait trajectories?” In other words, can the validity of personality trends across development be established through an examination of their association with, and ability to prospectively predict, the specific behavioral outcome of self-reported antisocial behavior? Results from the Romero et al. (2001) and Johnson et al. (2007) studies suggested that for the control group of females, behavioral undercontrol (i.e. low CON) and NEM would emerge as small but significant predictors of antisocial behavior at Time 2 in the current study. Since the two previous studies did not include girls with significant psychiatric problems, however, no specific predictions were made for this association among girls in the clinical group. Similarly, no hypotheses were advanced concerning the relation between CON at Time 2, and antisocial behavior at Time 3 since the Romero et al. study analyzed data across only two time points, and Johnson et al. failed to control for the effect of previous antisocial behavior. However, given the importance of studying mechanisms of trait development in non-normative samples, the current study explored personality-antisocial behavior relations across each assessment point.

*Study 3. Cross-sectional analyses of context-dependent expression of personality.* Lastly, Study 3 was designed to answer the question “What is a potential mechanism of personality trait stability (or instability)?” Since previous research has shown that neighborhood context can enhance the relation between personality (i.e. CON) and externalizing behavior, a CON x neighborhood context interaction was explored. Its validity as a potential mechanism of personality consistency was assessed according to its ability to predict self-reported externalizing behavior. Previous research led to the hypothesis that the relationship between CON and externalizing behavior would be stronger for those females residing in low cohesion neighborhoods. Girls in this third study were drawn from the second cohort of females assessed 5 years after the original group. Because neighborhood context was assessed only at Time 1 in this cohort, all analyses for Study 3 were cross-sectional in nature.

## Section Two: Method

### *Participants*

Participants included a control group (N = 110 at Time 1) and a clinical group (N = 360 at Time 1) of female adolescents assessed across three different waves: Time 1 (14-18 years), Time 2 (19-23), and Time 3 (24-28). Retention between assessment periods was strong for participants in both groups (89% for the control group, and 84% for the clinical group).

To form the clinical group, a broad-based sampling strategy was initiated to accrue a heterogeneous sample that would be representative of females with conduct disorder, a substance use disorder diagnoses, or both (i.e. conduct disorder and substance use disorder diagnoses). This psychiatric sample was “actively” recruited (i.e., via referrals) from a variety of sources including drug and alcohol treatment centers, group homes, juvenile courts, psychiatric and medical treatment facilities, and other research projects. Participants were also “passively” recruited through various announcements about the study: newspaper advertisements, word-of-mouth and brochures placed in medical clinics, local shopping centers, and college campuses. Those individuals who were recruited through drug and alcohol treatment centers participated in the study only after the completion of treatment. The control group was also actively recruited through a Pittsburgh-based subject recruitment agency, and was pre-screened for the absence of any psychiatric disorder.

Approximately 80% of the clinical group and 90% of the control group were recruited through active methods. Approximately 15% of subjects who were contacted refused to participate, and preliminary analyses indicated refusals were evenly distributed among the groups. As payment for participating in the study, subjects were given \$100 in gift certificates to a local shopping mall. Initial recruitment occurred between 1990 and 1995. Demographic data are presented in Table 1.

It should be noted that participants were excluded from the study if they had any past or present psychotic symptomatology, an IQ below 85, a neurological-neuromuscular disease, a past head injury that required hospitalization, a life-threatening medical illness, an uncorrectable sensory handicap, or if they were pregnant. The majority of participants in the clinical group (92%) were also on medication for the treatment of anxiety, depression, conduct disorder, or some other form of significant psychopathology.

Psychiatric diagnoses were formulated according to the criteria set forth in the revised third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM III-R) (American Psychiatric Association, 1987) using an expanded version of the Kiddie-Schedule for Affective Disorders and Schizophrenia-Expanded (K-SADS-E) (Orvaschel, Puig-Antich, Chambers, Tabrizi, & Johnson, 1982). The K-SADS-E evaluates current (past 6 months) and lifetime Axis I psychopathology. The psychiatric evaluations were conducted by trained research associates. The diagnoses were formulated by an experienced clinical associate who conducted the interview and were later independently verified by an assessment team composed of three trained clinical research associates and a child clinical psychologist according to the best estimate method (Leckman, Shalomskas, Thompson, Belanger, & Weissman, 1982). Psychiatric diagnoses for the clinical group are presented in Table 2.

*Measures: Study 1 and Study 2*

*Social Economic Status.* Social economic status (SES) was measured using the Hollingshead Four-Factor Index of Social Status (Hollingshead, 1975). This measure generates a SES score for each family based on the education, occupation, gender, and marital status of the head of household. Higher scores on the Hollingshead Index indicate better social economic status.

*Personality.* The Multidimensional Personality Questionnaire (MPQ; Tellegan, 1982) was used to assess personality at each visit. As a self-report measure of personality, the instrument assesses broad range of personality differences in affective and behavioral style (Tellegan, 1982). The MPQ is a factor analytically developed self-report instrument consisting of 300 statements to which participants respond “true” or “false.” Its scales consist of 11 primary personality dimensions (see Table 3) which are used to derive three higher order “superfactors” with alpha coefficients ranging from .76 to .89, and 30-day test-retest correlations ranging from .82 to .92 (Tellegan, 1982). Only scores on these three factors, Negative Emotionality (NEM), Positive Emotionality (PEM), and Constraint (CON) were analyzed in the current study, since these higher-order factors provide the clearest predictions from the literature.

Following Tellegan et al., 1988, the Positive Emotionality (PEM) factor was derived from a cluster analysis of items on the Wellbeing, Social Potency, Achievement, and Social Closeness trait dimensions. Individuals with high PEM have behavior and temperamental characteristics conducive to joy, and to active and rewarding engagement with social and work environments. In contrast, individuals with low PEM scores have tendencies to experience joylessness, loss of interest, and fatigue, reflecting non-pleasurable and possibly depressive disengagement.

The Negative Emotionality (NEM) factor was derived from a cluster analysis of items on the Stress Reaction, Alienation, and Aggression dimensions. Individuals high in NEM are prone to experience anxiety, anger, and related emotional and behavioral negative engagement. Individuals low in NEM have a somewhat phlegmatic temperament, disposing to calm, relaxation, and other non-pleasurable states of disengagement. It should be noted that NEM is a unique construct from PEM, rather than being two ends of a continuum. NEM is also a distinct from the broad construct of negative affect; NEM is often described as the tendency to experience psychological distress, negative moods, and behavioral and personal disengagement, while negative affect involves the actual states of distress or even depressive symptoms (Elkins, King, McGue, & Iacono, 2006).

The Constraint (CON) factor is associated with clusters of traits from the Control, Harm-avoidance, and Traditionalism dimensions. Individuals high in CON have tendencies to inhibit and restrain impulse expression, unconventional behavior, and risk-taking. In contrast, those low in CON are inclined to act on impulse, take risks, and ignore conventional restrictions.

Evidence for the construct validity of NEM and PEM comes from their respective correlations with the Neuroticism and Extraversion scales of the Eysenck Personality Questionnaire (Costa & McCrae, 1980) and from their correlations with the Positive and Negative Affectivity Scales (Watson, Clark, & Harkness, 1994). Evidence for the validity of the CON factor comes from its positive association with the control aspects of

Conscientiousness, and negative relation to Openness to Experience in the five-factor model of personality (Church, 1994).

*Antisocial Behavior.* The measure of antisocial behavior in the current investigation was the Andrew Scale of Offenses (Andrew, 1974). This scale is a 65-item measure listing a number of offenses ranging from mild, nonviolent behaviors (e.g. petty theft, verbal assault, truancy) to premeditated violent acts (e.g. voluntary manslaughter, assault with intent to commit murder). Subjects respond in a “yes” or “no” fashion as to whether they engaged in each behavior in the past 6-12 months. Items were weighted and summed to create a total offense score reflecting a continuum of antisocial behavior. Internal consistency (Cronbach’s alpha) ranged from .75 (Time 1) to .88 (Time 3).

*Measures: Study 3*

*Social Economic Status.* Procedures for calculating SES were identical to those utilized in Study 1 and Study 2.

*Personality.* Procedures for measuring and calculating personality domains were the same as those used in Study 1 and Study 2 as described above.

*Neighborhood Context.* Neighborhood context was measured via self-report using the Neighborhood Cohesion Instrument (Buckner, 1988). The measure boasts good internal consistency and stability with coefficients around .95, and represents one of the only existing measures of system-level neighborhood characteristics. The scale consists of 18 items ranging from *strongly agree* to *strongly disagree* on a 5-point Likert scale. According to Buckner (1988) the items represent a synthesis of the concepts of psychological sense of community (e.g. “I feel a common bond with other residents of this neighborhood”), attraction-to-neighborhood (e.g. “I plan to remain a resident of this neighborhood for a number of years”), and social interaction within a neighborhood (e.g. “I visit my neighbors in their homes”). The mean value of the measure therefore represents a “sense of community or cohesion.”

*Externalizing Behavior Problems.* Within the second cohort, externalizing behavior problems were assessed using the Externalizing Scale of Achenbach’s Youth Self Report Form (YSR; Achenbach, 1991a, b), a well-established standardized youth-report questionnaire designed to assess behavioral and emotional problems in children between 5 and 18 years. It should be noted that the YSR replaced the Andrew Scale as the primary behavioral outcome measure in this cohort due to a significant amount of missing data that was observed in preliminary analyses for the Andrew Scale among participants in the clinical group.

The YSR is very similar to the well-known Child Behavior Checklist (Achenbach & Edelbrock, 1983), which measures a variety of psychiatric and behavioral problems in children, except as the name implies, responses on the YSR are made in a self-report fashion. Participants rate how well each of 112 items describe them over the past 6 months using a 3-point Likert scale (0 = not true, 1 = somewhat true, 2 = very true or often). The externalizing problem scale consists primarily of items from the Delinquent and Aggressive Behavior subscales. Scores were computed according to procedures developed by Achenbach (1991a, b).

Previous research utilizing the YSR with normal and clinically referred youth suggests adequate reliability and validity in assessing a broad range of behavioral and emotional problems experienced by youth (Achenbach & Edelbrock, 1983). In a sample of 15-18 year old boys and girls, psychometric properties for internal consistency

(Cronbach's alpha) were .86, and a 1 week test-retest coefficient was approximately .87 (Achenbach, 1991).

Table 1  
*Demographic Data*

Measure	Clinical Group <i>Mean (SD)</i>	Control Group <i>Mean (SD)</i>
Age (at Time 1)	16.08 (1.28) <sub>a</sub>	15.71 (1.27) <sub>a</sub>
Education	9.62 (1.51)	9.78 (1.69)
SES	33.45 (13.63) <sub>b</sub>	40.91 (15.19)
<sup>b</sup> Ethnicity (%)		
White	66.8	74
Black	28	23.1
Hispanic	1.2	.6
Other	4	2

Note: SES = socioeconomic status. Means with shared subscripts are significantly different at  $p < .05$ .

Table 2  
*Percentage of Psychiatric Diagnoses for Clinical Group*

Measure	Percentage (N = 403)	
DSM-III-R Axis I disorders		
ADHD	24%	
Conduct disorder	52%	
Anxiety disorders		44%
Major depression	37%	
Bipolar disorders	4%	
Dysthymia		8%
Eating disorders	7%	
Somatoform disorders	1%	
Adjustment disorder	14%	

Notes: ADHD = attention deficit hyperactivity disorder.

Table 3

*Multidimensional Personality Questionnaire (MPQ) Individual Scale Descriptions*

MPQ Scale	Self - Description of a High Scorer
Traditionalism	Endorses high moral standards; supports religious values and institutions; condemns selfish disregard of others; deplors permissiveness; endorses strict child rearing practices; values propriety and a good reputation
Harm Avoidance	Does not enjoy the excitement of adventure and danger; prefers safer activities even if they are tedious or aggravating
Control	Is reflective; is cautious, careful, plodding, is rational and sensible; likes to anticipate events; likes to plan her/his activities
Aggression	Will hurt others for own advantage; is physically aggressive; is vindictive; likes to frighten and discomfort others; likes violent scenes
Alienation	Is a victim of bad luck; feels mistreated; is a target of false rumors; believes that others wish her/him harm; feels betrayed and used by "friends"
Stress Reaction	Is nervous, feels vulnerable, is sensitive and prone to worry; can feel miserable without reason and is troubled by guilt feelings
Achievement	Works hard; likes long hours and enjoys demanding projects; (17 items) persists where others give up; puts work and accomplishments before many other things; is a perfectionist
Social Potency	Is forceful and decisive; is persuasive and likes to influence others; enjoys or would enjoy leadership roles; takes charge of and likes to be noticed at social events
Well Being	Has a happy, cheerful disposition; feels good about self and sees a bright future; lives an exciting and active life
Social Closeness	Is sociable, likes people; finds pleasure in and values close interpersonal ties; is warm and affectionate; turns to others for comfort and help

### Section Three: Study Results and Individual Discussions

Demographic data for age, years of education, SES, and ethnicity are displayed in Table 1. T-tests were conducted to determine any significant differences in demographics between the clinical and control groups. Results indicated significant differences for age and SES [ $t(468) = 3.18, p < .05$ ], SES ( $t(468) = 5.77, p < .05$ ), but not for years of education. A chi-square test used to assess for group differences in ethnicity, and no significant differences were found. Similar analyses were conducted between the clinical group of girls comprising Studies 1 and 2, and the second cohort used in Study 3. No significant demographic differences were found between the two cohorts. Finally, although retention was high across all three time points, attrition analyses were conducted on the longitudinal cohort to examine any potential differences between study dropouts and the remaining group members. Study dropouts had an overall lower SES, though these results were not statistically significant.

Given some significant differences in SES and age between the two groups, these variables are included as covariates in all analyses where they may have theoretical potential of influencing the outcome. For any variables with a high degree of skew and kurtosis, simple log transformation procedures were incorporated to achieve normality in the variable.

#### *Study 1 Results*

The aim of Study 1 was to answer the question “*Do females with multiple mental disorders follow the same personality trajectories as normal controls?*” To begin, general trends across time were examined for NEM, PEM, and CON, separately for each group. Means and standard deviations are presented in Table 4. An initial examination of these descriptive statistics points to some important similarities and differences in MPQ-measured personality across time and across group. The control group was higher on PEM and CON across each time point as compared to the clinical group. In contrast, the control group had lower NEM scores across time compared to the clinical group. In an examination of MPQ factor trends across time, Figures 1, 2, and 3, illustrate that longitudinal mean NEM scores declined over time for both groups in a linear fashion, whereas PEM scores appeared to peak at Time 2 (19-23 years) and then decreased at Time 3 (24-28 years). For CON, mean scores increased across time in a linear fashion.

To analyze whether these observed trends were statistically significant, we examined mean scores at each time point for each MPQ-measured personality domain by performing a repeated measures analyses of variance (ANOVA). Time was used as a within-subject factor, and group as a between-subject factor. The results indicated a main effect of time, such that each MPQ factor exhibited significant changes between Time 1 and Time 3 [for NEM:  $F(2, 452) = 64.7, p < .001$ ; for PEM:  $F(2, 452) = 8.5, p < .001$ ; for CON:  $F(2, 452) = 72.2, p < .001$ ]. Results also indicated a main effect for group [for NEM:  $F(2, 452) = 66.56, p < .01$ ; for PEM:  $F(2, 452) = 9.80, p < .05$ ; for CON:  $F(2, 452) = 14.93$ ] indicating initial levels of each MPQ factor were significantly different between groups. Furthermore, significant interactions were observed between time and group, indicating significant differences in how personality progresses across time between groups.

To further explore this interaction in trait trajectories, post hoc comparisons utilizing a Bonferroni correction were conducted. Results indicated that group differences

on NEM and PEM were significant at Time 1, Time 2, and Time 3 [PEM: for Time 1:  $t(463) = 9.10, p < .01$ ; for Time 2:  $t(393) = 7.45, p < .01$ ; for Time 3:  $t(322) = 7.62, p < .01$ ; NEM: for Time 1:  $t(463) = 12.88, p < .01$ ; for Time 2:  $t(391) = 10.32, p < .01$ ; for Time 3:  $t(222) = 11.45, p < .01$ ] For CON, however, groups had significantly different scores at Time 1 [ $t(463) = 7.41, p < .01$ ] and at Time 3 [ $t(236) = 2.32, p < .05$ ], but not at Time 2 [ $t(392) = 1.76, n.s.$ ]. These findings suggest that control participants and clinical participants “look the same” on CON at Time 2.

Next, rank-order stability was assessed to determine the degree to which the relative ordering of individuals on each MPQ domain was maintained over time. The correlation between NEM, PEM, and CON across each time period are provided separately for group (see Table 5). All correlations were significant at  $p < .01$ . Across time, rank-order stability coefficients were medium to large in size. Additionally, the rank-order stability of each MPQ factor increased as the age of the sample increased. For example, estimates of rank-order stability of CON for the clinical group increased from .40 during adolescence, to .57 during adulthood.

Next, rank-order stability estimates for the clinical group were tested directly against those for the control to determine if these correlations were statistically significant. Because the correlations were independent, we used Blalock’s (1972)  $Z$  formula which employs a pooled estimate in generating the covariance of  $z$ -transformed scores and shows good control over Type I and Type II error rates. Seven of the nine correlations were significantly different using a two-tailed test with alpha at .01. For NEM, correlations were significantly different for all time comparisons. For PEM, all comparisons between groups were significantly different except for rank-order stability at Time 1 vs. Time 3. For CON, all comparisons were significantly different except for rank order stability at Time 2 vs. Time 3. Overall, these results suggest that the rank ordering of personality scores among participants in the control group are more stable than in the clinical group.

### *Study 1 Discussion*

In general, these results support the notion that group differences do exist in personality development across time, which highlights the importance of considering heterogeneous samples. Across each time period, absolute levels of each MPQ factor were able to distinguish the two groups of females in this study. The only exception was a lack of group differences for CON at Time 2. The observed mean-level differences in MPQ traits are consistent with other studies that find individuals with a significant degree of psychopathology tend to have higher levels of NEM and lower levels of PEM and CON compared to normal controls. For example, Cukrowicz, Taylor, Schatschneider, and Iacono (2006) found in a sample of children and adolescents that a pattern of high NEM and low CON was associated with conduct disorder, attention-deficit/hyperactivity disorder (ADHD), and co-morbid conduct disorder/ADHD, all disorders that were heavily represented in the current study’s clinical group. Furthermore, lower levels of PEM in the clinical group are not surprising; low PEM taps personality dimensions that overlap with DSM criteria for mood disorders (e.g., anxiety, depression), which also had a high prevalence rate among the clinical group participants. Thus, the current study supports the link between traits and mental disorders, suggesting personality plays a significant role in the underlining psychological structure and development of psychopathology.

Results also point to similarities and differences in MPQ personality trends across time for each group. Group similarities included an overall decline in mean NEM scores from adolescence to young adulthood, and an overall increase in mean CON scores. These findings support previous work (i.e. Johnson et al., 2007) that individuals indeed “mature” during this critical transition, reaching greater levels of self-control and harm-avoidance (high CON) and decreasing in levels of stress reaction, alienation, and overall aggression (low NEM). In contrast, mean PEM scores showed a small but significant increase in Time 2, but an overall mean decrease by Time 3. These findings contradict hypotheses, and previous research that supports a general trend of increased PEM dimensions (well-being, social potency, achievement, and social closeness) across time.

One possibility for this discrepancy may relate to sample characteristics of the female adolescents in the current investigation. Both groups consisted of “inner-city” girls from the Pittsburgh area which may represent a sample of females lower in SES relative to other U.S. cities. According to the U.S. Census Bureau, Pittsburgh represents the 12<sup>th</sup> poorest city in the country. Although not tested empirically, the girls in the current investigation may experience greater overall disadvantage than girls from other similar longitudinal studies that have been conducted in “wealthier” areas.

This study also supported the hypothesis that rank-order stability for each MPQ factor increases as the age of the sample increases. However, significant group differences in stability estimates emerged at each time point; overall, rank-order stability was greater for the control group compared to the clinical group. Although these findings do not establish the source of higher stability for control females, results are similar to population samples that examine individual-level change in personality configurations. Both Blonigen et al. (2006) and Roberts et al. (2001) reported that individuals with high levels of NEM and CON (similar to the clinical group of females in the present study) experienced lower levels of personality stability compared to individuals with the reverse pattern. It can be concluded that females with different personality configurations on NEM and CON exhibit different patterns of change. These findings highlight the need to avoid a “one-size-fits-all” approach to modeling trends in personality development, especially for females.

### *Study 2 Results*

The aim of Study 2 was to answer the question “*Can antisocial behavior establish the validity of personality trait trajectories?*” In other words, are personality variables useful predictors of change over time in antisocial behavior? To explore the relation between MPQ factors and antisocial behavior across time, a correlation matrix was computed with antisocial behavior and each MPQ factor across time (results are provided separately for each group). The correlation matrix is presented in Table 6. Significant correlations were observed in each group, suggesting that the observed relationship between personality variables and antisocial behavior are not exclusively attributable to girls with significant psychopathology. However, it should be noted that there was a very low prevalence rate and a restricted range of antisocial behavior among control participants. Additionally, the variable remained significantly skewed despite log transformation efforts. Correlations between variables for the control group should therefore be interpreted with caution.

As shown in Table 6, the strongest correlations were those between CON, NEM, and antisocial behavior for the clinical group ( $p < .01$ ). These correlations also remained

strong at each time point. For the control group, however, the majority of relations were lower or non-significant. Relations between personality and antisocial behavior also showed some differences among MPQ factors. Among girls in the clinical group, for example, although NEM and CON were significantly correlated with antisocial behavior across each time point, PEM did not show similar relations. In general, PEM demonstrated weak relations with antisocial behavior. Differences were also observed across time; for example, the relation between personality (i.e. NEM and CON) and antisocial behavior was strongest at Time 3.

To better illustrate these findings, simple linear regressions were conducted to identify each intercept and slope in order to plot the bivariate relationships across time. Given the general absence of antisocial behavior among the control group, and the lack of strong bivariate relations between antisocial behavior and personality for these girls, analyses were performed for the clinical group only.

The trends between personality (CON and NEM) and antisocial behavior across time are depicted in Figure 4 and Figure 5. To determine whether these trends were significantly different from each other, the bivariate relations at each time point were tested directly against each other using Blalock's (1972) Z formula. For NEM, results indicated the relation with antisocial behavior was significantly stronger at Time 3 compared to Time 1 and Time 2 ( $p < .05$ ). For CON, the relation with antisocial behavior was significantly different at each time point, with the strongest relation occurring again at Time 3 ( $p < .05$ ).

To examine temporal relations and the predictive validity of personality (specifically NEM and CON), a three-step hierarchical regression procedure was performed for NEM and CON with Time 2 and Time 3 antisocial behavior as the dependent variable. All independent variables were centered to reduce multicollinearity. For the first model with CON as the main predictor, age, education, and SES were entered in the first step to control for any potential relations to the dependent variable of antisocial behavior. In Step 2, antisocial behavior at Time 1 was entered to control for the relation between past and future antisocial behavior. For Step 3, CON at Time 1 was entered.

For results at Step 1, none of the demographic variables were significantly related to antisocial behavior, though SES approached clinical significance ( $\beta = .09$ ;  $p = .07$ ). At Step 2, antisocial behavior at Time 1 was found to be significantly related to antisocial behavior at Time 2 ( $\beta = .34$ ,  $p < .01$ ). Finally, there was no significant relation between CON at Time 1 and antisocial behavior at Time 2 in Step 3 of the model. These results demonstrated that CON is not a significant predictor of future antisocial behavior above and beyond the effects of previous antisocial behavior.

Identical regression procedures were then performed for NEM as the main predictor. Demographic variables were entered in Step 1, antisocial behavior at Time 1 was entered in Step 2, and NEM at Time 1 was entered in Step 3. For this model, none of the demographic variables were related to antisocial behavior. At Step 2, antisocial behavior at Time 1 was again significantly related to antisocial behavior at Time 2 ( $\beta = .34$ ,  $p < .01$ ). In Step 3, the relation between NEM at Time 1 and antisocial behavior at Time 2 approached statistical significance ( $\beta = .14$ ,  $p = .06$ ), indicating NEM accounted for a small amount of unique variance in Time 2 antisocial behavior.

Finally, hierarchical regressions were performed to identify if Time 2 NEM and CON were significant predictors of antisocial behavior at Time 3, while again controlling for previous antisocial behavior. For the NEM model, none of the variables in any of the steps reached statistical significance. For the CON model, education was a significant predictor in Step 1 ( $\beta = -.30, p < .05$ ), and NEM emerged as a significant predictor at Step 3 ( $\beta = .22, p < .05$ ) demonstrating that NEM also accounts for a small but significant amount of variance in Time 3 antisocial behavior.

In an attempt to further understand the relation between NEM, CON, and antisocial behavior across time, two exploratory analyses were conducted. First, moderation effects were tested utilizing a three-step hierarchical regression procedure at each separate time point, with antisocial behavior as the dependent variable in each model. All independent variables were again centered to reduce multicollinearity between the interaction term and its constituent lower terms. To explore if any moderation effects were present, an interaction term was generated by multiplying CON with NEM. As depicted in Table 7, age, education, and SES were entered in the first step to control for any potential relations to the dependent variable of antisocial behavior. In the second step, the centered variables of CON and NEM were entered to ascertain any significant main effects. The third step consisted of entering the CON x NEM interaction term. Moderation analyses were performed for the clinical group only.

For results at Step 1, demographic variables were not significantly related to antisocial behavior with the exception of analyses at Time 3. Both age and education were associated with antisocial behavior. For results at Step 2, both CON and NEM were found to be significantly related to antisocial behavior, with the strongest relations occurring at Time 3. Across each time point, NEM was positively associated with antisocial behavior, while CON demonstrated a negative association with antisocial behavior. Finally, in Step 3 the CON x NEM interaction was significant for Time 1 and 3, but not for Time 2.

Since the final model was significant for Time 1 and Time 3, simple slope analyses were conducted to better understand the interaction between CON and NEM in predicting antisocial behavior. For both Time 1 and Time 3, results indicated that CON is a better predictor of offenses at high levels of NEM (for Time 1:  $\beta = -.24, p < .05$ ; for Time 2:  $\beta = -.34, p < .05$ ) than at low levels of NEM (for Time 1:  $\beta = -.14, n.s.$ ; for Time 2:  $\beta = -.08, n.s.$ ). To better illustrate these findings, the interaction for Time 3 is plotted in Figure 6.

### *Study 2 Discussion*

This study investigated whether development in personality traits (NEM and CON) had an important impact on the undesirable outcome of antisocial behavior. For participants in the clinical group, both NEM and CON were significantly correlated with antisocial behavior across each time point, with the strongest relations occurring at Time 3. In an effort to disentangle the temporal effects that each exerts on the other, hierarchical regressions analyses were employed while partialling out the strong autoregressive effects of prior problem behavior. Neither model suggested personality prospectively predicts antisocial behavior, at least above and beyond the effects of previous antisocial behavior. Interestingly, these findings contradict previous longitudinal investigations suggesting that the personality traits of CON and NEM are both major

determinants of future antisocial behavior, and key factors for explaining why some girls are extremely delinquent and other are not.

One possibility for this distinction is a potential high amount of predictor-criterion overlap, especially for CON and antisocial behavior. Although the measure of antisocial behavior in the current study focuses on specific acts (which were used to generate a behavioral continuum of offenses) rather than personality traits, the MPQ scale for CON has some items that directly assess aggressive behavior. This attribute of the MPQ may make it an especially difficult test of the predictive power of personality traits.

Moreover, the relation between the personality traits of CON and NEM and antisocial behavior is most likely reciprocal in nature; the presence of such traits in females may place them at a generalized risk for the development of antisocial psychopathology, yet the cumulative experience of engaging in antisocial behavior may strengthen the stability of these personality traits (Caspi, 1988). Although bi-directional effects were not directly tested in this study, the existence of such transactions may explain the high correlation of antisocial behavior and personality across time in the current study, while also taking into account the inability of personality to independently predict future antisocial behavior. Similarly, the correlation between personality and antisocial behavior in this sample may simply be spurious (i.e., caused by shared risk factors or a common underlining factor), providing evidence for the assumption of a single underlying externalizing behavior syndrome deriving from similar etiological roots (Krueger et al., 2002).

Another possibility is that other factors, such as particular combinations of traits, have more important effects on future antisocial behavior. For example, the results from this study also revealed a significant interaction between the personality domains of CON and NEM. Low CON was found to be a better predictor of antisocial behavior at high levels of NEM than at low levels of NEM. This interaction highlights the importance of considering multi-trait profiles for understanding the development of antisocial behavior in females. For example, the coupling of low behavioral control and preference for risky activities (i.e. CON) with a proneness to negative emotions and stress reactivity (NEM) may pose a unique vulnerability factor for the development of certain types of antisocial behavior disorders. For example, Hicks, Markon, Patrick, Krueger, and Newman (2004) found that the most “aggressive” subtype of psychopathy (a personality disorder similar to antisocial personality disorder, characterized by egocentricity, grandiosity, remorselessness, callousness, impulsivity, and manipulateness) had the trait combination of low CON and high NEM. Taken together, the current findings extend the idea that specific personality trait configurations may relate differentially to antisocial behavior, and that these models can be applied to females across multiple time points.

### *Study 3 Results*

The aim of Study 3 was to answer the question “*What is a potential mechanism of personality trait stability (or instability)?*” Specifically, the variable of neighborhood context was utilized as a potential mechanism of trait consistency, with the hypothesis that CON would be related to externalizing behavior problems only in girls who came from a disadvantaged neighborhood, as indexed by the construct “neighborhood cohesion.” Analyses were cross-sectional, and utilized participants from a second cohort. Due to a significant lack of externalizing behavior problems in the control group, analyses were conducted for the clinical group only.

Interaction effects were tested by applying another three-step hierarchical regression procedure, this time with externalizing behavior problems as the dependent variable in the model. All independent variables were first centered to reduce multicollinearity between the interaction term and its constituent lower terms. An interaction term was generated by multiplying CON individually with neighborhood cohesion. Age, education, and SES were entered in the first step to control for any potential relations to the dependent variable of externalizing behavior. In the second step, the centered variables of CON and neighborhood cohesion were entered to ascertain any significant main effects. The third step consisted of entering the CON x neighborhood cohesion interaction term. Results for the regression analyses are presented in Table 8.

Of the demographic variables, only SES was significantly related to externalizing behavior problems. This finding is consistent with previous research suggesting adolescents living in neighborhoods low in SES are at a greater risk for the development of externalizing symptoms and future criminal behavior. In the second step, only CON was found to be significantly related to externalizing behavior problems for these girls; the neighborhood cohesion variable did not evidence a significant relation with externalizing behavior. Finally, in contrast to predictions, there was no significant interaction between CON and neighborhood cohesion as indicated in Step 3.

In an exploratory analysis, the same three-step hierarchical regression procedure was conducted with *internalizing* problems as the dependent variable. Similar to the above regression, age, education, and SES were entered into the first step, the centered variables of CON and neighborhood cohesion were entered into the second step, and the CON x neighborhood cohesion interaction term was entered into Step 3. As can be seen in the lower portion of Table 8, none of the demographic variables were significantly related to internalizing behavior. In Step 2, there was a significant main effect for neighborhood cohesion, but no main effect for CON. However, when the CON x neighborhood cohesion interaction term was added to the model at Step 3, a significant finding emerged and the  $R^2$  increased by a significant but very small amount (i.e. only 4% of the total variance in internalizing problems was accounted for in this model). Since the final model was significant, however, simple slope analyses were conducted to better understand the interaction between CON and neighborhood cohesion in predicting internalizing problems. Results indicated that CON was more strongly related to internalizing problems for girls in low cohesion neighborhoods ( $\beta = .30, p < .05$ ), than for girls in high cohesion neighborhoods ( $\beta = .07, n.s.$ ). Results are plotted in Figure 7, illustrating the main effect for neighborhood and significant interaction.

### *Study 3 Discussion*

In contrast to the two previous studies that found an interaction between personality traits and neighborhood factors on externalizing behavior (i.e. Lynam et al., 2000; Meier, Slutske, Arndt, & Cadoret, 2007), the effects of CON on externalizing behavior were not stronger in disadvantaged neighborhoods for the females in the current investigation. One potential explanation may be differences in measures of neighborhood context. For example, the Lynam et al. study measured neighborhood context using census-defined information that calculates neighborhood risk using percentage of families below the poverty line, percentage of men unemployed, median household income, percentage of families with children headed by a single parent, percentage of households on public assistance, and percentage of African Americans in the census tract.

This objective index of neighborhood may be a more powerful predictor than the self-reported measure of neighborhood cohesion utilized in the present study. Warranting this conclusion were the overall low correlations between neighborhood cohesion and externalizing behavior found among the girls in the present sample. Finally, it may also be the case that boys' and girls' externalizing behavior may be differently affected by certain risk factors. For example, females are typically more invested in interpersonal relationships than male adolescents, and are more likely to get involved in antisocial behavior as a function of parental, peer, or relationship conflicts (Crick & Rose, 2000; Gorman-Smith & Loeber, 2005). General neighborhood effects might be less relevant to delineating the personality-delinquency relation for females as compared to interpersonal or relationship variables. Unfortunately, the female-only sample in the current study prohibited the exploration of such gender effects.

Despite the null results described above, Study 3 revealed that a significant CON x neighborhood interaction did emerge for *internalizing disorders*. Although the interaction reported was small (it only accounted for 4% of the variance in internalizing disorders) and not predicted *a priori*, the findings are theoretically revealing with respect to existing literature on personality disorders. Specifically, the combination of internalizing disorder symptoms and the personality domain of CON is a core feature of borderline personality disorder (BPD), which is a disorder more commonly found in females. Moreover, two core features of BPD described in the Diagnostic and Statistical Manual of Mental Disorders (DSM-III; American Psychological Association) are a pervasive instability in moods, and impulsive behaviors such as excessive spending, binge eating, and risky sex. It should be noted that although Axis I internalizing disorders (e.g. anxiety, depression) and the symptoms of these disorders are not necessarily synonymous, evidence suggests they are also not separate entities. For example, research has established that neuroticism (a broad personality trait reflecting individual differences in emotional lability and subjective distress) shares a common diathesis with anxiety and depression, thereby making certain individuals vulnerable to the emergence of all three (Taylor, Reeves, James & Bobadilla, 2006; Mineka, Watson, & Clark, 1998).

In sum, although evidence from this study is preliminary, it is plausible that (1) the interaction between neighborhood factors and personality traits are different for girls compared to boys; and (2) although neighborhood factors do not appear to strengthen the relation between externalizing behavior and CON for girls, neighborhood factors may strengthen the relation between internalizing disorders and CON, thereby serving as a potential mechanism for the onset of BPD.

Table 4

*Means and Standard Deviations for MPQ Factors Across Time Separately by Group*

	NEM		PEM		CON	
	Clinical Mean (SD)	Control Mean (SD)	Clinical Mean (SD)	Control Mean (SD)	Clinical Mean (SD)	Control Mean (SD)
<i>Time 1</i>	151.2 (16.2)	130.4 (13.8)	148.5 (12.8)	154.8 (10.9)	153.1 (15.0)	164.2 (13.9)
<i>Time 2</i>	140.0 (17.7)	126.3 (14.3)	150.2 (13.8)	156.3 (12.8)	165.3 (14.0)	167.8 (12.2)
<i>Time 3</i>	135.9 (18.6)	119.8 (12.4)	146.9 (13.6)	152.3 (12.7)	167.4 (12.7)	171.1 (11.3)

Table 5

*Rank Order Stability Across Time for MPQ factors Separately by Group*

	<u>NEM</u>			<u>PEM</u>			<u>CON</u>		
	T-1	T-2	T-3	T-1	T-2	T-3	T-1	T-2	T-3
T-1	--	.46*	.52*	--	.40*	.48*	--	.40*	.34*
T-2	.55*	--	.60*	.57*	--	.57*	.48*	--	.57*
T-3	.57*	.84*	--	.48*	.75*	--	.49*	.57*	--

*Note:* T-1, T-2, and T-3 = Time 1, Time 2, Time3, respectively; correlation coefficients for the clinical group are presented above the principle diagonal; those for the control group are below.

\*  $p < .01$ .

Table 6  
*Correlation Coefficients Across Time for MPQ Factors and Antisocial Behavior*

Measure	1	2	3	4
<i>Time 1 (14-18 years)</i>				
1. NEM	--	.03	.01	.29**
2. PEM	.09	--	.25**	-.08
3. CON	.07	.08	--	-.26**
4. Antisocial Behavior	.07	-.10	-.16*	--
<i>Time 2 (19-23 years)</i>				
1. NEM	--	-.08	.17	.28**
2. PEM	-.07	--	.11	.08
3. CON	-.02	.11	--	-.18**
4. Antisocial Behavior	.19	-.06	-.14**	--
<i>Time 3 (24-28 years)</i>				
1. NEM	--	-.08	.00	.38**
2. PEM	.17	--	.07	-.15
3. CON	.06	.14	--	-.37**
4. Antisocial Behavior	.18	.15	-.19	--

*Note:* Correlation coefficients for the clinical group are presented above the principle diagonal, and those for the control group are below the principle diagonal; SES = socioeconomic status;

NEM = negative emotionality; PEM = positive emotionality; CON = constraint.

\*  $p < .05$ . \*\*  $p < .01$ .

Table 7  
*Moderation Analyses Predicting Antisocial Behavior Across Time*

Step and Measure	R <sup>2</sup>	ΔR <sup>2</sup>	F	df	Final β
<u>Time 1</u>					
Step 1	.01	.01	.98	3, 304	
Age					.01
Education					.02
SES					.09
Step 2	.16	.15	26.62*	2, 302	
CON					-.26**
NEM					.29**
Step 3	.17	.01	3.75*	1, 301	
CON x NEM					-.12*
<u>Time 2</u>					
Step 1	.04	.04	3.73	3, 251	
Age					-.13
Education					-.07
SES					.07
Step 2	.14	.11	14.4*	2, 249	
CON					-.18**
NEM					.28**
Step 3	.13	.01	.01	1, 248	
CON x NEM					.00
<u>Time 3</u>					
Step 1	.04	.04	1.87	3, 236	
Age					.27*
Education					-.31*
SES					-.02
Step 2	.30	.26	25.07*	2, 234	
CON					-.39**
NEM					.36**
Step 3	.33	.03	4.42*	1, 233	
CON x NEM					-.17**

\*  $p < .05$ . \*\*  $p < .01$ .

Table 8

*Moderation Analyses Predicting Externalizing and Internalizing Behavior at Time 1*

Step and Measure	R <sup>2</sup>	ΔR <sup>2</sup>	F	df	Final β
<i>Dependent Variable: Externalizing Problems</i>					
Step 1	.02	.01	2.7	2, 245	
Age					-.06
Education					.02
SES					.13*
Step 2	.14	.12	15.8**	2, 243	
CON					-.36**
Neighborhood					.05
Step 3	.14	.11	.42	1, 242	
CON x Neighborhood					-.04
<i>Dependent Variable: Internalizing Problems</i>					
Step 1	.01	.00	.87	2, 245	
Age					-.03
Education					.02
SES					.07
Step 2	.01	.00	.87	2, 243	
CON					-.04
Neighborhood					-.12*
Step 3	.04	.03	3.47*	1, 242	
CON x Neighborhood					-.13*

\* p &lt; .05, \*\* p &lt; .01.

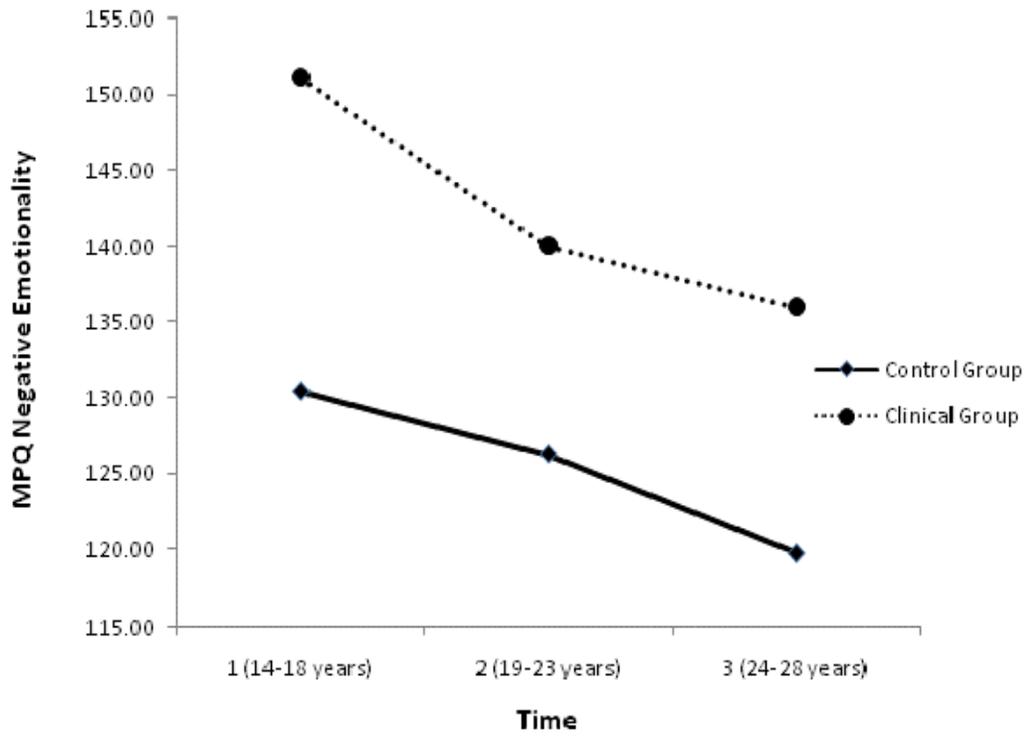


Figure 1. *MPQ Negative Emotionality Trajectories Separately by Group*

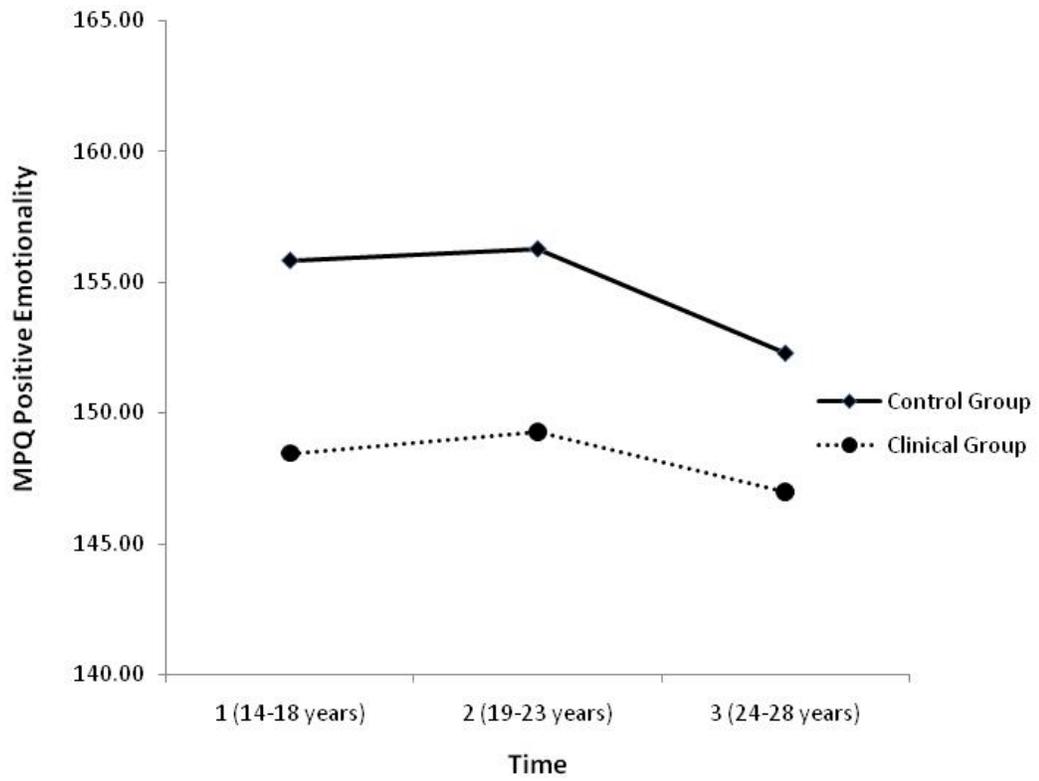


Figure 2. *MPQ Positive Emotionality Trajectories Separately by Group*

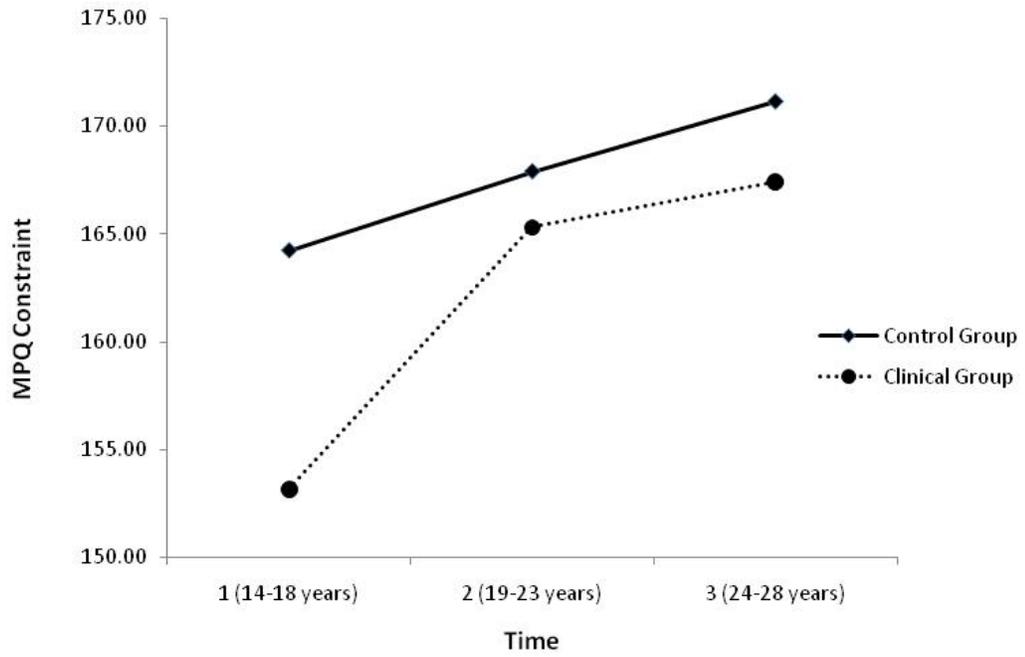


Figure 3. *MPQ Constraint Trajectories Separately by Group*

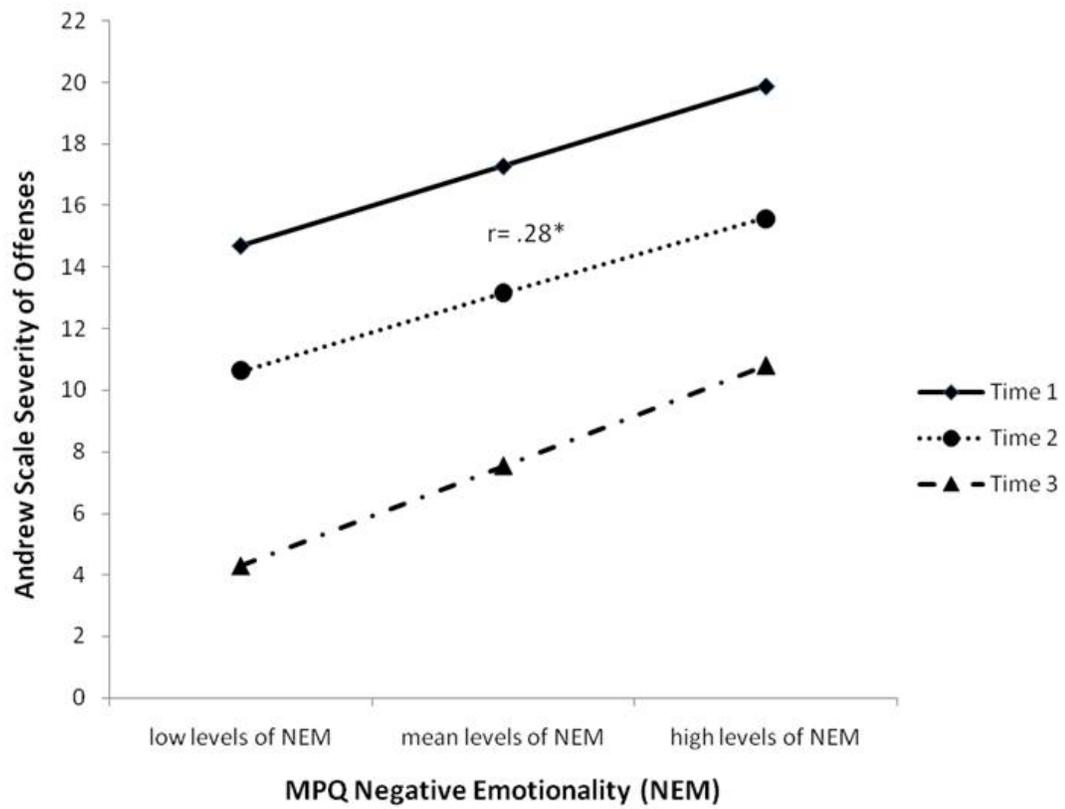


Figure 4. *Relation between Negative Emotionality and Antisocial Behavior across Time*

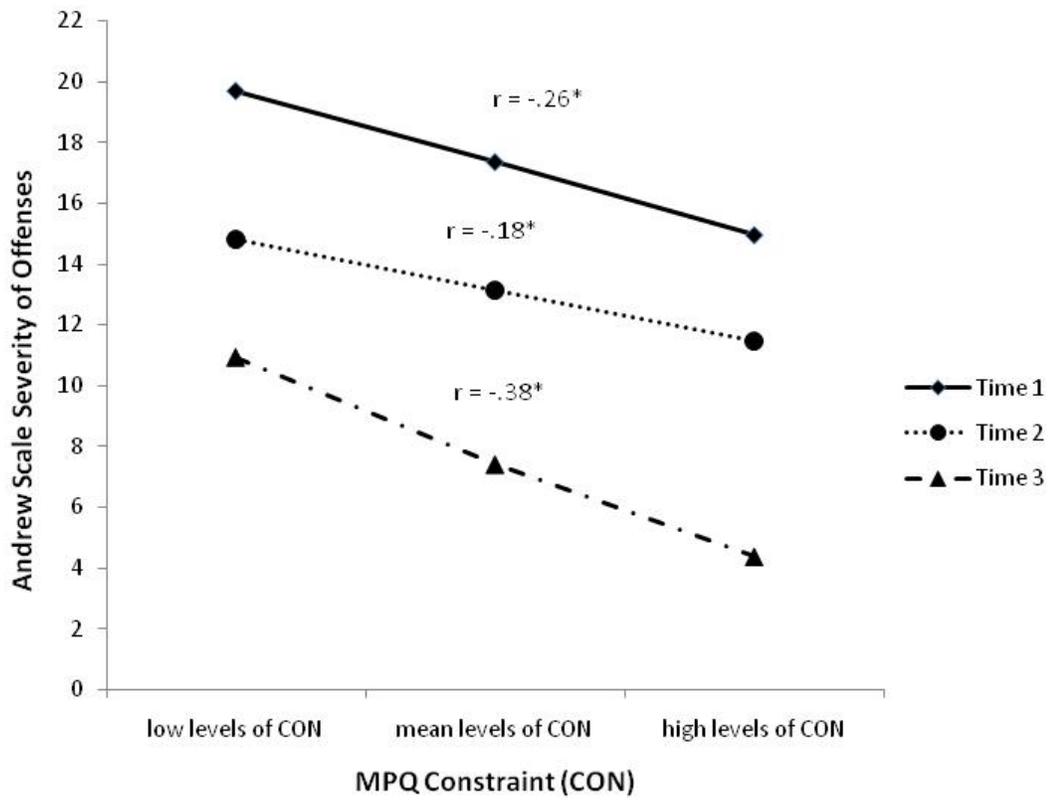


Figure 5. *Relation between Constraint and Antisocial Behavior across Time*

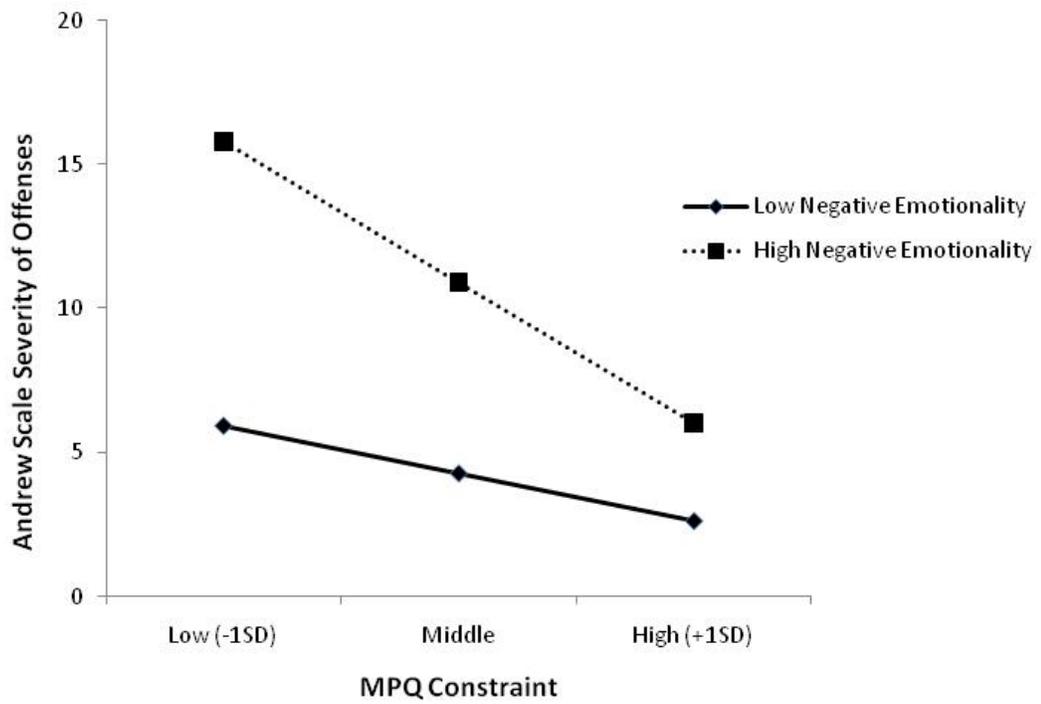


Figure 6. *Simple Regression Slopes Illustrating the Interaction of Negative Emotionality and Constraint in the Prediction of Antisocial Behavior*

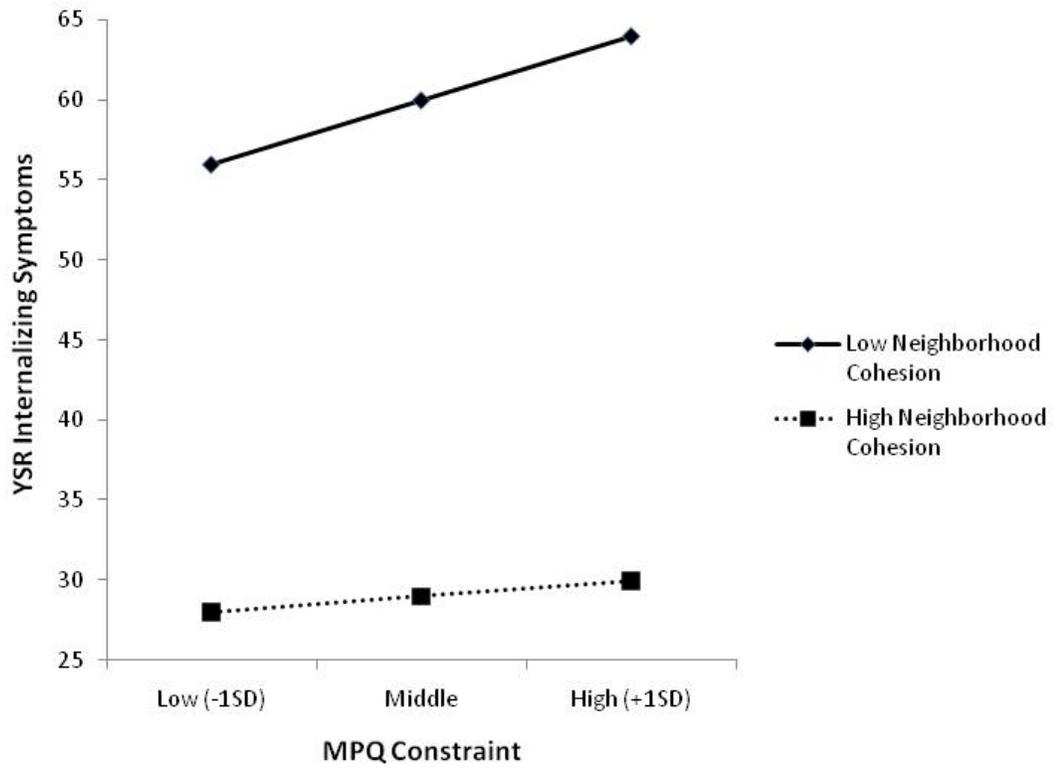


Figure 7. *Simple Regression Slopes Illustrating the Interaction of Constraint and Neighborhood Cohesion in the Prediction of Antisocial Behavior*

#### Section Four: General Discussion and Conclusions

The findings in this investigation confirm the importance of exploring heterogeneity in personality development, especially as it relates to females transitioning from adolescence to adulthood who are disturbed in multiple areas of psychological functioning. Similarities and differences in trait trajectories emerged between groups, confirming certain hypotheses and rejecting others. Most importantly, results established the importance of considering heterogeneity in mean-levels and rank order stability estimates across time (Study 1), the validity of established personality trends across time (Study 2), and possible mechanisms that may contribute to personality trait consistency across development (Study 3).

In addressing these questions, it can be concluded that although group differences do exist in personality development across time, all females fundamentally move towards the developmental trajectory described as the maturity principle. Regardless of initial status on the MPQ factors of CON and NEM at each time point, females in this sample transitioned into adulthood with greater responsibility, increased control, more traditional values, decreased aggression, and more emotional stability, suggesting all young females indeed “mature” psychologically across time. These findings are generally consistent with other longitudinal studies. However, stability in this movement towards maturity depended on a person’s psychological make-up, suggesting a history of mental illness may facilitate a certain amount of inconsistency in personality traits across time. Regardless of group membership, however, personality stability increased as the age of the sample increased, providing evidence that personality does not evidence dramatic changes across any point in the lifecourse.

This investigation also suggests personality does not evidence consistent temporal relations with regard to the prediction of antisocial behavior. Although analyses were restricted to the clinical group, individual differences in CON and NEM did not play an important role in predicting antisocial behavior across time, at least above and beyond the effects of previous antisocial behavior. Findings highlight the need to consider other important behavioral outcomes in validating personality trends across time. In particular, other variables associated with NEM and CON that exhibit less predictor-criterion overlap may prove to be better measures of the potential direction and rate of change in personality trends.

Finally, a possible mechanism of trait consistency emerged in the current investigation. Environmental influences, specifically neighborhood context, may strengthen the association between personality traits (i.e. CON) and internalizing symptoms, elucidating a possible pathway to the development of borderline personality disorder for certain subgroups of females. However, further empirical research is necessary to substantiate this finding.

Additionally, several methodological limitations should be considered. First, to more thoroughly examine the the relation between personality trends and outcomes across time, statistical techniques such as structural equation modeling and growth curve analyses should be utilized. Unlike ANOVA and regression procedures, these methodologies allow one to partial out both errors of measurement and systematic variance specific to each variable (Weisner, 2003). Additionally, although mean-level and rank-order stability estimates are important indices of personality development across time, characteristics of developmental trajectories such as comparisons between the

initial levels (intercept) and rate of change (slope) of each personality factor can only be directly assessed using structural equation models. Unfortunately, such analyses were not possible in the current investigation due to its extreme-group design, and low numbers of participants at Time 3.

Similarly, this investigation focused solely on mean-level and rank order measures of personality change. Other indices of change exist in the literature, and should be incorporated in future studies with this subgroup. For example, two additional types of change are “structural” and “ipsative change” (Robins et al., 2001). Structural stability refers to the “degree of continuity in the intercorrelations among traits over time (pg. 620),” and is typically assessed using structural equation methods. According to Robins et al., ipsative change or stability “refers to the degree to which the relative ordering of traits within an individual stays the same over time . . . and only ipsative stability characterizes changes that occur at the level of the individual (pg. 620).” Future studies incorporating these two additional forms of change may shed light on the manner in which traits demonstrate changes not captured by mean or rank-order estimates, such as subtle fluctuations occurring at the structural and individual level of analysis. Another potential limitation regarding the generalizability of current findings is that they may be fairly specific to personality heterogeneity among females. There is evidence that personality development is similar in males and females who are followed longitudinally (e.g. Robins et al., 2001). However, other evidence indicates no significant differences between male and female samples (Roberts & DelVecchio, 2000). Further, evidence suggests gender differences in the personality correlates of externalizing problems (e.g. Martin, Lynch, Pollock, & Duncan), suggesting further study of additional traits in males may be useful in clarifying the psychological and contextual mechanisms of personality change and stability. Although this female-only sample provided an excellent initial exploration of heterogeneity in personality development, research must systematically compare both sexes within a cohort to validate current findings. Another caveat is that the control group was comprised of females with an absence of any psychiatric diagnosis and limited antisocial behavior across the lifecourse, thus yielding a subsample of “supernormals.” Unfortunately, the extreme normality of this group prohibited comparisons with the clinical group for any analyses that included antisocial behavior as the outcome. Although this extreme groups design represents an important first step in detangling differences in personality development, future studies should incorporate individuals across all levels of the antisocial behavior spectrum.

Another issue that warrants consideration was the utilization of general personality factors rather than more specific assessments of individual traits that might be expected to be related to antisocial behavior in females (e.g. anger, irritability, or hostile rumination). For example, other studies have demonstrated the ability to disaggregate broad personality domains into subcomponents that more specifically explain trends in personality development across time. In a recent longitudinal investigation of the correlates of violence, Caprara, Paciello, Gerbino, and Cugini (2007) found distinct trajectories for the traits of Hostile Rumination (similar to MPQ Aggression and Stress Reaction scales) and Irritability (similar to MPQ Stress Reaction and Well Being scales) in regard to their stability, change, and correlates with violent and non-violent aggression. The advantage to measuring components of MPQ factors more specifically is if different forms of antisocial behavior are expressions of specific traits, and not products of the

same disposition or driving mechanism. The MPQ factors were not subdivided in the current investigation because with the exception of the above study, there has been little empirical support for the subdivision of MPQ factors for longitudinal studies of personality development.

In conclusion, the findings from this investigation highlight the importance of considering distinct subgroups of the general population in longitudinal studies of personality development. This was the first investigation to contrast the personality development of psychologically disturbed females with that of normal controls. Overall, personality exhibited remarkable stability. However, stability was far from perfect in the present investigation, and multiple factors (interactions between traits, environmental factors, time between assessments) were each essential to fully capture the “how” and a small portion of “why” traits progress in both predictable and unpredictable ways. Moreover, although girls in this study evidenced trends towards psychological maturity, the magnitude, rate, and rank-order stability of these maturational changes showed meaningful differences between control participants and those with significant psychiatric comorbidity.

In conclusion, further exploration of these differences may guide prevention efforts needed for girls with mental health profiles comparable to those of the current study’s clinical group; females who, as a result of their chronic psychiatric and behavioral problems, infectious diseases, and violence-related issues exact a huge cost to society (Odgers et al., 2008; Tremblay, 2000; Bardone, Moffitt, Caspi, Dickson, & Silva, 1996). For example, future studies might reveal ways to modify or alter personality trait trajectories, offering a promising target of future interventions. In a review of the adult outcomes of adolescent girls with substantial psychiatric comorbidity, Pajer (1998) concluded that this specific subgroup of the population manifests an increased mortality rate, a 10- to 4-fold increase in the rate of criminality, dysfunctional and often violent relationships, and high rates of multiple service utilization. Despite the vast individual and societal consequences, our understanding of the developmental trajectories of these girls remains limited, which underscores the need for continued investigations of this sort among high-risk underrepresented groups.

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Vita

Lauren C. Gudonis

Place of Birth: Chicago, IL  
Date of Birth: February 8, 1981

Education & Training

Indiana University School of Medicine 2008-present  
Section of Adolescent Medicine  
Leadership and Education in Adolescent Health (LEAH)  
Pre-Doctoral Fellow

University of Kentucky 2003-present  
Clinical Psychology Ph.D. Candidate

Certificate in College Teaching and Learning Spring 2008  
Preparing Future Faculty Program

M.S. – Clinical Psychology Fall 2005

University of Wisconsin-Madison 1999-2002  
B.S. – Psychology Fall 2002  
Psychology Department Honors Program

Honors

University of Kentucky  
Edith Schwab Memorial Scholarship, 2007 (\$1000)  
*For recognized commitment to public service and excellent graduate records*

Student Merit Travel Award, 2004, 2005 (\$400)  
*Award for travel to professional conference to present scholarly research*

Research Challenge Trust Fund Fellowship, 2003 (\$15,000)  
*Graduate student stipend to support ongoing research efforts*

University of Kentucky Harris Psychological Services Center  
Scientist-Practitioner Award, 2008  
*Outstanding work in the Scientist Practitioner model of care*

Excellent Clinical Performance Award, 2008  
*Excellent clinical work in surplus of 300 hours at the Harris PSC*

University of Wisconsin-Madison  
Undergraduate Independent Research Scholarship, 2002 (\$5,000)

### Professional Affiliations

American Psychological Association, Division 12 (APA)  
Kentucky Psychological Association

### Publications

- Gudonis, L.C., Miller, D.J., Miller, J.D., & Lynam, D.R. (in press). Conceptualizing Personality Disorders from a General Model of Personality Functioning: Antisocial Personality Disorder and the Five-Factor Model. *Personality and Mental Health*.
- Gudonis, L.C. & Derefinko, K.J. (in press). The treatment of substance misuse in psychopathic individuals: Why heterogeneity matters. In Special Issue: Treatment and Prevention of Alcohol Related Violence. *Substance Use and Misuse*.
- Gudonis, L.C., & Giancola, P.R., & Tarter, R.E. (2007). A 3-year longitudinal investigation of the relation between nonintellective cognitive skills and delinquency in adolescent boys with a family history of a substance use disorder. In H.C. Sentowski (Ed.), *Cognitive disorders research trends* (183-194). Hauppauge, NY: Nova Science Publishers, Inc.
- Gudonis, L.C. & Giancola, P.R. (2007). Misunderstandings surrounding the treatment of juvenile delinquency. In J.P. Tsai (Ed.), *Leading-Edge Cognitive Disorders Research* (pp. 1-4). Hauppauge, NY: Nova Science Publishers, Inc.
- Lynam, D.R., & Gudonis, L.C. (2005). The development of psychopathy. *Annual Review of Clinical Psychology, 1*, 381-407.
- Shoal, G.D., Gudonis, L.C., Giancola, P.R., & Tarter, R.E. (2007). Delinquency as a mediator of the relation between negative affectivity and adolescent alcohol use disorder. *Addictive Behaviors, 32*, 2747-2765.
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- Acevedo-Polakovich, I. D., Reynaga-Abiko, G., Garriot, P. O., Derefinko, K. A., Wimsatt, M. K., Gudonis, L. C., & Brown, T. L. (2007). Beyond instrument selection: Cultural considerations in the psychological assessment of US Latinas/os. *Professional Psychology: Research and Practice, 38*, 375-384.

### Manuscripts Submitted for Publication

- Gudonis, L.G., Aalsma, M.C., Lewis, L., Tong, Y., Tu, W. (under review) Longitudinal effects of individual and romantic partner influences on adolescent substance use.
- Singer, R.A., Derefinko, K.D., Gudonis, L.C. & Lynam, D.R. (under review) Psychopathy and the Five Factor Model: A Study Using Nonhuman Primates.

### Manuscripts in Preparation

- Gudonis, L.C., Aalsma, M.C., & Tong, Y. Delinquency trajectories and young adult sexual health outcomes.
- Gudonis, L.C., Giancola, P.R., & Aalsma, M.C. Individual factors and contextual disadvantage interactions in predicting delinquency: A longitudinal study of high-risk females.

### Presentations at Scientific Meetings

- Singer, R.A., Derefinko, K.D., & Gudonis, L.C. (2007). A cross-species investigation of psychopathy and the Five Factor Model. *Presented at the Interdisciplinary Graduate School Conference at the University of Kentucky.*
- Gudonis, L.C. (2006). Conceptualizing antisocial personality disorder from the Five-Factor Model. *Presented at the conference for the American Psychological Association.*
- Gudonis, L.C. & Lynam, D.R. (2005). Health related risky behaviors and the predictive validity of the IAT: Results from 3 Studies. *Presented at the Society for Prevention Research.*
- Gudonis, L.C. (2005). Screening for antisocial personality disorder: A comparison of 3 measures. *Presented at the Society for Research in Psychopathology.*
- Gudonis, L.C. (2004). Central and peripheral processing of anti-marijuana messages: Effects of message sensation value, distraction, and sensation seeking. *Presented at the Society for Prevention Research.*

### Editorial Experience

*Ad Hoc* Journal Article Reviewer: Criminology  
American Society of Criminology

*Ad Hoc* Journal Article Reviewer: Aggressive Behavior  
Journal of the International Society for Research on Aggression

*Ad Hoc* Journal Article Reviewer: Pediatrics  
Official Journal of the American Academy of Pediatrics

*Ad Hoc* Journal Article Reviewer: The Journal of Sex Research  
Society for the Scientific Study of Sexuality

### Professional Experience

*Practicum Placement* 2008-present  
Juvenile Detention Center, Indianapolis, IN  
Marion County Superior Court  
Duties: Psychopathological and risk assessment of detainees ages 7-17. Additional duties include consultation and participation in the Juvenile Detention Alternative Initiative research project.

*Practicum Placement* 2008-present  
Wishard Hospital, Indianapolis, IN  
Primary Care Center – Teen Care  
Duties: Individual therapy delivered in a primary care setting for urban and disadvantaged adolescents on Medicaid. Care emphasizes a systems approach and motivational interviewing to redirect wayward youth.

*Practicum Placement – Assistant Director* 2007-2008  
Harris Psychological Services Center, Lexington, KY

University of Kentucky

Duties: Administrative and managerial tasks related to an outpatient mental health clinic setting. Additional duties included supervising undergraduate clinic assistants, reviewing and managing therapist files and documentation, scheduling and conducting intake and psychopathology assessments, implementing empirically supported treatments, building connections with referral agencies in the greater Lexington area, budget adherence and responsibility of clinic financial matters, marketing, advertising, and crisis management.

*Therapist*

Harris Psychological Services Center, Lexington, KY 2003-2008

University of Kentucky

Duties: Individual therapy and group therapy with a focus on empirically validated treatments for clients with a broad range of psychopathology. Specific group experiences included: Dialectical behavioral therapy (DBT) for individuals diagnosed with Borderline Personality Disorder, social skills training for children with ADHD, anxiety, and autism, and anger control skills training for children with externalizing pathology. Additional duties included intake assessments, psychopathological assessments, and crisis response and management with an on-call pager system.

*Practicum Placement*

Bureau of Prisons, Lexington, KY 2006- 2007

Federal Medical Center

Duties: Drug education class instructor. Additional duties included intake assessments and group therapy for inmates. Group experiences emphasized empirically supported treatments and included: Recovery from substance dependence, trauma workshop for victims of physical and sexual abuse, and mindfulness-based pain management.

*Practicum Placement*

Chrysalis House, Lexington, KY 2005-2006

Residential Substance Abuse Treatment Center

Duties: Individual and group therapy for women with co-occurring substance dependence and severe psychopathology with a focus on empirically validated treatments. Group co-leader of parenting skills training workshop for women recovering from substance use disorders.

*Practicum Placement*

University of Kentucky College of Medicine 2005-2006

Department of Neurology

Duties: Neuropsychological and intellectual assessments for children and adults.

*Practicum Placement*

Hope Center for Women, Lexington, KY 2004-2006

Residential Substance Abuse Treatment Center

Duties: Group therapy with a focus on empirically validated treatment for building healthy relationships for women in substance abuse recovery.

*Graduate Research Assistant* 2003-2005  
Center for Drug Abuse Research Translation  
University of Kentucky  
Duties: Assisted in the implementation of a research protocol funded by the Center for Drug Abuse Research Translation, a prevention center funded by the National Institute on Drug Abuse (NIDA). Additional duties included laboratory task programming in Medialab and DirectRT, data collection, and management of undergraduate research assistants.

Teaching Experience

University of Kentucky:  
Instructor: Experimental Psychology (PSY 215) Summer 2007

University of Kentucky Spring 2007  
Instructor: Personality and Individual Differences (PSY 313)

University of Kentucky Fall 2006  
Teaching Assistant: Graduate Psychometrics & Statistics (PSY 630)

University of Kentucky Summer 2006  
Instructor: Introduction to Psychology (PSY 100)

University of Kentucky Fall 2005  
Teaching Assistant: Graduate Clinical Interviewing (PSY 629)

University of Wisconsin – Madison Spring 2003  
Teaching Assistant: Experimental Psychology (PSY 210)