AGGRESSIVE BEHAVIOR
Volume 29, pages 497–514 (2003)

# Examining Antisocial Behavior Through the lens of the Five Factor Model of Personality

**Joshua D. Miller*, Donald Lynam, and Carl Leukefeld**

*University of Kentucky, Lexington, Kentucky*

**The current study attempts to provide greater precision in understanding how personality is related to antisocial behavior. Specifically, we examined the relations between the facets (subordinate traits) from three domains (superordinate dimensions): Neuroticism, Agreeableness, and Conscientiousness, of the Five Factor Model and five outcome variables: stability of conduct problems, variety of conduct problems, onset of conduct problems, aggression, and antisocial personality disorder symptoms. These relations were examined in a community sample of 481 individuals. These three personality dimensions were chosen for exploration due to their consistent relations, at the domain level, with antisocial behaviors. The results from this study suggest that the facets from the dimension of Agreeableness are the most consistently related to all five outcomes. However, the facets from all three domains made significant contributions. Overall, three personality traits stood out as being the strongest and most consistent predictors: low straightforwardness, low compliance, and low deliberation. Implications for prevention and intervention are discussed. Aggr. Behav. 29:497–514, 2003. © 2003 Wiley-Liss, Inc.**

Personality refers to an individual's tendency to think, feel, and act in certain consistent ways. Despite previous attempts to call the reality and utility of personality traits into question [Mischel, 1968], recent work provides little reason to doubt the existence or utility of personality traits. First, personality traits can be measured reliably [e.g., Epstein, 1979; Jackson and Paunonen, 1985], and different sources agree with one another in their judgments of an individual's personality [e.g., Norman and Goldberg, 1963]. For example, across the five dimensions of their personality inventory, Costa and McCrae [1992] found high average intraclass correlations between two peer raters $r = .42$, between self and peer ratings $r = .46$, and between self and spouse ratings $r = .56$. Second, in studies of the basic structure of personality, similar traits are found across different ages, genders, and cultures. In a sample of over 1,500 participants, Costa et al. [1991] found extremely similar underlying factor structures in men and women, in older and younger adults, and in white and non-white participants; similar dimensions have been identified in children, adolescents, and adults [e.g., John et al., 1994]. Results from cross-cultural studies in the Netherlands, Germany, Japan,

Grant sponsor: National Institute on Drug Abuse; Grant number: DA05312-10; Grant sponsor: NIH General Clinical Research; Grant number: M01 RR026202; Grant sponsor: University of Kentucky Research Challenge Trust Fund.
*Correspondence to: Joshua Miller, PhD, Western Psychiatric Institute and Clinic, 3811 O'Hara St., Pittsburgh, PA 15213. E-mail: jdmill3@uky.edu.
Received 11 Februrary 2001; amended version accepted 20 August 2002

Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/ab.10064

and China are quite consistent with those using American samples [see John, 1990; Costa and McCrae, 1992]. Third, personality traits are remarkably stable across time. In a sample of 398 men and women, Costa and McCrae [1988] found an average six-year stability coefficient of .83 across the five broad domains measured by their personality inventory. In an earlier meta-analysis, Conley [1984] found that personality traits were almost as stable as intelligence across the life course; in fact, he found personality stability coefficients of .82 and .67 across ten- and twenty-year time spans respectively. Fourth, personality traits are substantially genetically influenced. In a study of twins reared apart and together, Tellegen et al. [1988] found that, on average, 51% of the variation in scores on three broad personality traits was due to genetic variation. In short, personality traits are real.

The construct of personality has much to offer to the study of antisocial behavior. Specifically, personality might resolve some of the lingering issues in the field. For example, personality might, in part, account for the stability of antisocial behavior [Robins, 1966; Sampson and Laub, 1990], in that personality is also remarkably stable over time [Roberts and DelVecchio, 2000]. That is, if certain relatively stable personality profiles are related to criminal offending, then it is understandable why these antisocial behaviors remain rather stable as well. In addition, the heritability of antisocial behavior [Carey and Goldman, 1997] might also be explained by the heritability of personality. For example, what one might inherit is not a gene to offend but rather a tendency to think, feel, and interact with the environment in certain ways that make one more inclined to behave in a criminal fashion. Finally, if certain personality dimensions or traits are consistently related to criminality, then these dimensions might be used as a focal point for both prevention and intervention activities.

Unfortunately, researchers in the field of antisocial behavior have often been skeptical of the utility and importance of personality in understanding these behaviors, possibly for good reason. In the past, studies on the relation between personality and crime were often plagued by methodological shortcomings that revolved around three major issues: 1) the use of an ill-defined personality construct, 2) suspicion of the validity of the tests purporting to measure it (i.e., projective tests), and 3) concern about the process of scale construction through criterion keying (i.e., items chosen solely for their proven ability to differentiate between known groups) which leads to predictor-criterion overlap and limits the ability of these scale to provide meaningful information.

However, as discussed by Miller and Lynam [2001], much has changed in the field of personality research and it may be time to take a second look at personality. These authors argued that 1) broader, more basic, and better validated, models of personality have been developed, 2) projective tests such as the Rorschach or Thematic Apperception Test are no longer viewed as valid, reliable indicators of personality [Lilienfeld et al., 2000], and 3) it is generally recognized that criterion-keyed tests like the Minnesota Multiphasic Personality Inventory (MMPI) and the California Psychological Inventory (CPI) are greatly limited in terms of providing basic information about personality. As a result of these changes, Miller and Lynam [2001] argued that research using basic models of personality can make a valuable contribution to our understanding of antisocial behavior and should be considered in explanations of this type of behavior.

For personality to be maximally useful, however, the specific traits involved in antisocial behavior must be identified. A recent meta-analytic examination [Miller and Lynam, 2001] of the relations between several structural models of personality (i.e. Cloninger's Temperament and Character model; Costa and McCrae's Five Factor Model; Eysenck's P-E-N model;

Tellegen's three factor model) and antisocial behavior revealed consistent and moderately large effects. Specifically, personality dimensions related to an antagonistic interpersonal style (e.g., low Agreeableness, Psychoticism, Cooperativeness, and Negative Emotionality) were the strongest predictors. Following Antagonism, personality dimensions related to an impulsive cognitive and behavior style (e.g., Constraint, low Conscientiousness, Psychoticism, Novelty Seeking, and low Self-directedness) were the next most consistent predictors of antisocial behavior. Lastly, domains related to emotional instability and maladjustment (e.g., Neuroticism, Negative Emotionality) demonstrated small but significant relations with antisocial behavior as well.

Although the findings from the Miller and Lynam [2001] meta-analysis provide support for the utility of personality constructs in the examination of antisocial behavior, the authors offer suggestions for how to make further advances in our understanding of these relations. First, they note that a large majority of the extant research has been conducted using Eysenck's P-E-N personality model to the exclusion of other models. Although well validated, this model also has several limitations. Specifically, Eysenck's three factor model may not be as broad or comprehensive as other models. For example, Eysenck's dimension of Psychoticism appears to be a blend of factors related to Antagonism/Agreeableness and Conscientiousness/Constraint [Costa and McCrae, 1995b; Goldberg and Rosolack, 1994]. However, there is much resolution to be gained by using a model that has more dimensions. For example, Psychoticism might be significantly related to a construct of interest. However, because it appears to be a blend of two more basic dimensions, Agreeableness and Conscientiousness, the true nature of the relation is unclear. It might be that both constructs are equally important or it might be that the relation is due to the Antagonism component but not the Conscientiousness component. Thus, as a result of using a broader model, the results become more precise. This point is important because it may be that these dimensions have their effects via completely different mechanisms.

Even more information is available at the subordinate trait level. Several models, such as the FFM and Tellegen's three factor model [1985], provide specific subordinate traits that contribute to the higher order domains. Recent research has demonstrated the increased predictive utility that comes from moving from the superordinate domain level to the subordinate facet level. For example, Paunonen and Ashton [2001] found that specific personality traits explained significantly more variance as compared to broader dimensions for a number of behavioral outcomes such as alcohol consumption, tobacco consumption, and attitudes towards gambling. Additionally, subordinate traits have been successfully employed in efforts to understand the construct of psychopathy, a personality configuration associated with high rates of offending. For example, Miller et al. [2001] found excellent agreement across experts on their trait descriptions of the prototypical psychopath.

For these reasons, Miller and Lynam [2001] argue that future research should be primarily concerned with examining how these more specific traits are related to aggression, delinquency, and crime because this research will allow for a more precise examination of the relations. By understanding which specific traits are related to antisocial behavior, researchers might be better able to look for the exact mechanisms by which personality affects an individual's engagement in these behaviors.

The current study addresses these issues by using Costa and McCrae's [1990] Five Factor Model. This model contains five broad domains, each comprised of six specific traits or facets that can be utilized in the examination of the relations between personality and crime/delinquency. Before describing the current study in further detail, a brief review of the FFM

is needed. The Five Factor Model of personality was derived originally from studies of the English language to identify the domains of personality functioning most important in describing the personality traits of oneself and other persons [Digman, 1990; John and Srivastava, 1999; Wiggins and Pincus, 1992]. This lexical research emphasized five broad domains of personality, identified as Extraversion (surgency or positive affectivity), Agreeableness, Conscientiousness (or Constraint), Neuroticism (negative affectivity), and Openness (intellect or unconventionality) [John and Srivastava, 1999]. Extraversion assesses an individual's proneness towards positive emotions and sociability. Agreeableness is concerned with an individual's interpersonal relationships and strategies; people high in Agreeableness tend to be trusting, straightforward, and empathic whereas those who score low tend to be arrogant, manipulative, and unconcerned about others. Conscientiousness relates to the "control of impulses" as well as to differences in the ability to plan, organize, and complete behavioral tasks. The personality domain of Neuroticism assesses emotional adjustment and stability. The domain of Openness to Experience refers to an individual's interest in culture and to the preference for new activities and emotions. Each of these five broad domains can be further differentiated into underlying facets or components. For example, Costa and McCrae [1995a] have proposed six facets within each domain on the basis of their research with the NEO Personality Inventory-Revised [NEO PI-R; Costa and McCrae, 1992]. For example, they suggest that the domain of Conscientiousness can be usefully differentiated into more specific facets of competence (vs. laxity), order (vs. disorganization), dutifulness (vs. undependability), achievement striving (vs. desultoriness), self-discipline (vs. hedonism), and deliberation (vs. hastiness).

In the current study, we use the FFM to examine the relations between these specific personality facets and several self-report measures of antisocial behavior including indices of aggression, conduct problems, onset of conduct problems, and antisocial personality disorder symptoms. These variables were chosen because they represent several important elements of antisocial behavior such as stability, variety, onset, and severity. In an effort to reduce the number of analyses, only the facets from the three personality dimensions [Agreeableness, Conscientiousness, and Neuroticism] that emerged as significant predictors in the previous meta-analysis will be used. Based on previous work with psychopathy [Lynam, 2002; Miller et al., 2001; Widiger and Lynam, 1998], we expect to observe several relations. We hypothesize that all the facets of Agreeableness will be negatively related to the outcome variables. Individuals who tend to be manipulative, arrogant, deceptive, noncompliant, and low in empathy should be more likely to act in an antisocial and aggressive manner. Further, we believe that only a subset of the facets of Conscientiousness, specifically dutifulness, self-discipline, and deliberation, will be negatively related to antisocial behavior. Individuals who have trouble thinking through the potential consequences of their behavior before acting and who tend to be unmotivated may be more prone to these problematic behaviors. Finally, we expect the facets of Neuroticism to be complexly related to antisocial behavior; more specifically, we predict that the facets of angry hostility, and impulsiveness will be positively related to antisocial behavior, whereas the remaining facets of Neuroticism, anxiety, depression, self-consciousness, and vulnerability, will be uncorrelated or slightly negatively correlated with antisocial behavior. Individuals who tend to experience feelings of anger and frustration and have trouble resisting temptations or urges will be more likely to act aggressively or in an antisocial fashion. We examine these relations in the context of a community sample of young adults, insuring a wide range of variability in the personality measures, as well as the measures of crime, delinquency, and aggression.

## METHOD

### Participants

The sample used in this study was composed of 481 participants who are part of the ongoing Lexington Longitudinal Study [see Clayton et al., 1996; Lynam et al, 1999 for more details]. These individuals are part of a larger sample (n = 1431) that has been followed since the 1987–1988 school year, at which time participants were in the $6^{th}$ grade. Data were collected from the students through school-based questionnaires over a five-year period from $6^{th}$ through $10^{th}$ grades and again via mailed survey at age 20. Following the mailed survey at age 20, 481 (approximately 47% of the mailed-survey sample) individuals participated in an extensive, 3–4 hour laboratory protocol which included personality assessments and a diagnostic interview, as well as detailed histories of past and current substance use and delinquency. The average age of the participants during this protocol was 21. The sample was evenly split with 242 men and 239 women. In regards to ethnicity, 80% of the sample was white, 16% black, 1% Asian, 1% Hispanic, and 2% biracial.

Attrition analyses were conducted in order to examine the similarity of our lab sample to the larger longitudinal sample. The lab sample of 481 was compared to the 950 individuals for whom data had been collected during $6^{th}$ grade, $7^{th}$ or $8^{th}$ grade, and $9^{th}$ or $10^{th}$ grade, and who constituted the longitudinal study. We examined whether the 481 differed on a multitude of variables assessed at $6^{th}$ grade, $7^{th}$ and $8^{th}$, and $9^{th}$ and $10^{th}$ grades. These variables included the following: gender, age, race; lifetime, yearly, and monthly use of cigarettes, chewing tobacco, alcohol, and marijuana at each of the three ages; sensation seeking, peer relations, family relations, self-esteem, and peer pressure resistance at each age.

The laboratory sample differed in only a few small ways such that the individuals in the lab sample tended to be younger, $t$ (981) $= -3.15$, $p < .01$, and reported more marijuana use during $7^{th}$ /$8^{th}$ grade, $t$ (699) $= -2.11$, $p < .05$. In addition, the laboratory sample was more likely to be white, $\chi^2 = 11.98$, df $= 1$, $p < .001$. No other differences were significant. Finally, a pairwise regression analysis was conducted in which all of these variables were entered (except age, race, and gender which were only entered once) for all three assessment periods in order to predict an individual's present versus absent status in the laboratory sample. Missing status accounted for a small but significant amount of the variance in the 54 variables, $R^2 = .06$, $F$ (54, 1214) $= 1.45$, $p \leq .05$. Overall, these results suggest that the laboratory sample is comparable to the remainder of the sample that was not chosen for the more intensive laboratory protocol. In the current study, the data come from both the laboratory protocol and the mailed survey.

### Procedure

Before the participants were brought into the laboratory, they were asked to sign a consent form and to complete a packet of questionnaires mailed to them a week prior to the lab protocol. The mailed packet consisted of several self-report measures including the Revised NEO-Personality Inventory (NEO-PI-R) [Costa and McCrae, 1992].

The laboratory protocol itself was approximately three to four hours in duration and was administered by trained research assistants and graduate students. During the protocol, participants completed Life History Calendars related to delinquency, segments of the Diagnostic Interview Schedule [DIS; Robins et al., 1997], several subtests from the Wechsler

Adult Intelligence Scale-Revised (WAIS-R) and a questionnaire designed to assess attention deficit hyperactivity symptoms.

## Measures

**NEO-PI-R.** The Revised NEO-Personality Inventory (NEO-PI-R) is a self-report questionnaire, developed by Costa and McCrae [1992] to assess normal personality dimensions based on the Five Factor Model of personality. The instrument consists of 240 items that are rated on a five-point scale, anchored by "strongly disagree" and "strongly agree." The NEO-PI-R yields a score for all five domains (Neuroticism, Extraversion, Agreeableness, Conscientiousness, and Openness) based on 48 questions per domain, and assesses six facets within each domain using eight items per facet. Many studies have been conducted using the NEO-PI-R and it has consistently shown good reliability and validity. Internal consistency for the five broad domains has ranged from .86 to .92 and for the individual facets from .56 to .81 [Costa et al., 1991].

**Diagnostic Interview Schedule.** The Diagnostic Interview Schedule [DIS; Robins et al., 1997] is a structured interview used by non-clinicians to assess the presence or absence of psychiatric disorders. The version of the DIS used in the current study corresponds with diagnoses included in the American Psychiatric Association (APA) Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV) [1994]. Although the DIS has been changed periodically to correspond to the criteria of the most current version of the DSM, these changes do not alter the DIS as an assessment tool. Thus, reliability and validity evidence is believed to be the same across versions. The DIS-II, which corresponded to the DSM-III, proved to have good sensitivity (.75), excellent specificity (.94), and moderate positive predictive power (.76) [Robins et al., 1982]. Kappa, a measure of agreement, was calculated to see how reliable the DIS was for administration by non-clinicians versus administration by psychiatrists. Kappa ranged from a low of .4 (only for a diagnosis of panic disorder) to a high of 1 (for a diagnosis of anorexia nervosa) with all other diagnoses at least as high as .51 [Robins et al., 1982].

For the current study, we examined antisocial personality disorder symptoms (ASPD), which had a mean of .59. This means that on average our participants met criteria for less than one symptom of ASPD.

**Life History Calendar—Delinquency.** The Life History Calendar (LHC) is a retrospective method for collecting data on a wide range of life events and behaviors [Caspi et al., 1996]. The LHC is a large grid with rows representing the different activities and events of interest, while the columns partition the grid into different blocks of time. In our LHC, we asked about the occurrence of delinquent acts (i.e. truancy, stealing, fire-setting, fighting) and substance use beginning in 1986, when participants were in the fifth grade, up until the time of the laboratory protocol. Each year was broken into three four-month segments and participants were asked about the occurrence and frequency of acts and use during these time intervals. Previous studies [Caspi et al., 1996; Freedman et al., 1988] and data from our project document the reliability and validity of the LHC. In our study, agreement between current survey reports of earlier substance use (in $7^{th}$, $8^{th}$, $9^{th}$, and $10^{th}$ grades and at age 20–21) and the retrospective LHC was good with average kappas of .47, .46, and .57 for cigarettes, alcohol, and marijuana respectively.

For the present study, we counted the number of four-month periods in which an individual reported engaging in certain behaviors. For delinquency, we created three

variables: 1) the number of periods during which a participant reported engaging in any delinquent act (stability), 2) the total number of different types of delinquent acts that a participant reported across the course of the calendar (variety), and 3) age at first onset of conduct problems (two periods in a row with at least one conduct problem). The average number of periods in which a participant engaged in a criminal/delinquent problem was 11.7 out of a maximum of 39 periods. The average score for the variety of conduct problems, out of a possible 22, was 4. For individuals who met criteria for onset of conduct problems (two consecutive periods with a conduct problem), the average period at which it first occurred coincided with the age of 15.

**Aggression.** The aggression variable was derived from the Conflict Tactics Scale [Straus and Gelles, 1990]. The internal consistency for this scale was adequate ($\alpha = .84$). The aggression scale consisted of 10 items asking whether the participant had engaged in a variety of aggressive acts during the past 90 days. The scores on the 10 items were added to make up the aggression score. The mean score for this variable was 1.5, out of a range of 10.

## RESULTS

A three-part analytic strategy was used. First, the zero order relations between the facets and the measures of antisocial behavior were examined. Next, for each domain and each of the antisocial behavior outcomes, a simultaneous regression was conducted in which antisocial behavior was regressed on to the facets which had significant zero order relations. The purpose of these analyses was to identify which facets from a given domain had the most predictive power. Finally, in the last series of analyses, we regressed each of the antisocial behavior outcomes on the facets (from all three domains) that made independent contributions in the previous analyses. For example, for conduct problem stability, the facets of angry hostility, impulsiveness, straightforwardness, compliance, and deliberation were entered simultaneously. These final analyses indicated which of the personality facets accounted for significant portions of unique variance and provided information about which personality traits were most important to each antisocial behavior outcome. In addition, we examined the proportion of variance accounted for in order to get an estimate of the general importance of personality.

### Zero Order and Partial Correlations

Table I lists the facets that make up Neuroticism, Agreeableness, and Conscientiousness. In the first analytic step we examined the correlations between the antisocial behavior variables and the 18 facet scores of the NEO-PI-R, see Table II. For the variables of conduct problem stability, variety of conduct problems, and onset of conduct problems, the relations are partial correlations controlling for differences in the number of life history calendar periods that were assessed (periods ranged from 36 to 39 depending on when the participant was assessed). In order to control for the large number of relations examined, we increased our criterion level for significance to .01. The correlations are presented for men and women combined, unless there was a significant difference between the two correlations, which was tested by examining the significance of the gender by personality facet interaction in a regression analysis. Out of a possible 90 correlations, no significant differences were found between men and women. This suggests that personality relates to antisocial behavior in a relatively consistent manner irrespective of gender.

**Table I. FFM Facets and Definitions**

| | |
|---|---|
| Neuroticism | |
| Anxiety | Apprehensive, fearful, prone to worry vs. calm, relaxed |
| Angry Hostility | Tendency to experience anger, frustration, bitterness vs easygoing, slow to anger |
| Depression | Tendency to experience depressive affect such as guilt, sadness, hopelessness, and loneliness |
| Self-Consciousness | Discomfort around others, sensitive to ridicule, easily embarrassed, prone to feelings of inferiority |
| Impulsiveness | Refers to the inability to control cravings and urges |
| Vulnerability | Vulnerability to stress; unable to cope with stress, becoming dependent, hopeless, or panicked when facing emergency situations |
| Agreeableness | |
| Trust | Believe others are honest and well-intentioned vs cynical and skeptical |
| Straightforwardness | Frank, sincere, and ingenuous, vs. manipulative, deceptive |
| Altruism | Active concern for others' welfare vs. self-centered and reluctance to get involved in the problems of others |
| Compliance | Reactions to interpersonal conflict; defer to others, inhibit aggression, vs. aggressive, prefer competition |
| Modesty | Humble, self-effacing vs. belief that one is superior, arrogance, conceited |
| Tendermindedness | Attitudes of sympathy, concern for others vs. hardheaded, realists, not moved by appeals of pity |
| Conscientiousness | |
| Competence | Sense that one is capable, sensible, effective vs. lower opinions of abilities, feeling unprepared, inept |
| Order | Neat, tidy, well-organized vs. unable to get organized, unmethodical |
| Dutifulness | Strict adherence to ethical principles and moral obligations vs. undependable and unreliable |
| Achievement Striving | High aspiration levels, diligent, purposeful, vs. lackadaisical, lazy, lacking ambition |
| Self-Discipline | Ability to begin and carry out tasks despite boredom and other distractions |
| Deliberation | Tendency to think before acting; cautious, deliberate vs. hasty, spontaneous, fail to consider consequences |

In regard to the overall personality domains, the relations between the facets of Neuroticism and the outcome variables were mixed. Two Neuroticism facets (anxiety and self-consciousness) were unrelated to all five variables. In addition, the facet of vulnerability was significantly positively related to two of the variables. Finally, the facets of angry hostility (4/5), depression (4/5), and impulsiveness (4/5) were positively related to multiple antisocial behaviors.

The relations between the facets of Agreeableness and antisocial behavior were far more uniform. Four of the facets (trust, straightforwardness, altruism, compliance) were significantly negatively related to all five of the outcome variables. Similarly, the facet of tendermindedness was negatively related to four of the five. Only the facet of modesty was consistently unrelated (0/5). Like the relations for the facets of Agreeableness, the relations between the facets of Conscientiousness and antisocial behavior were fairly consistent. Three facets (competence, dutifulness, and deliberation) were significantly negatively related to four of the five variables, while two were negatively related to three of the five (achievement striving and self-discipline). Only the facet of order showed weak to non-existent relations (1/5).

**Table II. Correlations Between Neuroticism, Agreeableness, and Conscientiousness Facets and Antisocial Behavior**

| | Stability of CP | Variety of CP | Onset | ASPD Symps | Aggression | Average |
|---|---|---|---|---|---|---|
| Anxiety | −.02 | .00 | .10 | .03 | .07 | −.00 |
| Angry Hostility | .30** | .35** | −.15 | .31** | .35** | .29 |
| Depression | .15** | .17** | −.01 | .20** | .22** | .15 |
| Self-Consciousness | .02 | .05 | .13 | .02 | .11 | .01 |
| Impulsiveness | .22** | .23** | −.03 | .17** | .20** | .17 |
| Vulnerability | .03 | .08 | .03 | .15** | .16** | .08 |
| Trust | −.24** | −.32** | .17** | −.34** | −.29** | −.27 |
| Straightforwardness | −.47** | −.44** | .29** | −.34** | −.29** | −.37 |
| Altruism | −.30** | −.31** | .18** | −.30** | −.26** | −.27 |
| Compliance | −.37** | −.40** | .20** | −.32** | −.37** | −.33 |
| Modesty | −.06 | −.07 | .02 | −.07 | −.02 | −.05 |
| Tendermindedness | −.12** | −.13** | .12 | −.18** | −.14** | −.14 |
| Competence | −.22** | −.21** | .03 | −.28** | −.16** | −.18 |
| Order | −.15** | −.07 | .10 | −.07 | −.05 | −.09 |
| Dutifulness | −.23** | −.25** | .02 | −.29** | −.20** | −.20 |
| Achievement Striving | −.15** | −.14** | .02 | −.22** | −.08 | −.12 |
| Self-Discipline | −.15** | −.14** | .06 | −.16** | −.10 | −.12 |
| Deliberation | −.35** | −.32** | .12 | −.32** | −.18** | −.26 |

*p ≤ .05, **p ≤ .01.
Onset (n = 292). Only individuals that ever had two periods in a row with a conduct problem were included.
For the variables of Stability, Variety, and Onset, the relations are partial correlations in which the number of LHC periods assessed were controlled for.
The Onset variable was reversed scored when included in the average.

Across all five antisocial behaviors, several mean correlations for each facet stand out (see Table II). In regard to Neuroticism, the strongest relation to antisocial behavior was for the facet of angry hostility (.29). For the domain of Agreeableness, the two highest correlations were for straightforwardness (−.37) and compliance (−.33). Finally, for the domain of Conscientiousness, the strongest correlate was for the deliberation facet (−.26).

## Hierarchical Analyses—Conducted Separately by Personality Domain

Next, each measure of antisocial behavior was regressed on to the facets that had been significantly related to it one personality domain at a time. For example, in regard to the stability of conduct problems, all four facets from Neuroticism, which had been significantly correlated with this variable at the zero order level, were entered. Results can be seen in Table III. The results were relatively consistent within domains across the outcomes. The selected facets from the domain of Neuroticism accounted for between 10% and 13% of the variance in four of the antisocial behavior variables, with angry hostility and impulsiveness making consistent independent contributions. In regard to Agreeableness, the selected facets predicted between 5% and 19% of the variance in the five antisocial behavior variables, with the facets of trust, straightforwardness, and compliance making the most consistent independent contributions. Finally, the facets from Conscientiousness contributed between

**Table III. Regression Analyses Predicting Antisocial Behavior From Neuroticism, Agreeableness, and Conscientiousness Facets**

| | | Stability of CP | | | | Variety of CP | | | | Onset of CP | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | B | SE | β | $\Delta R^2$ | B | SE | β | $\Delta R^2$ | B | SE | β | $\Delta R^2$ |
| 1. | Gender | −5.45** | .82 | −.29 | | −1.67 | .24 | −.31 | | | | | |
| | LHC Periods | .83 | .29 | .12 | .11** | .17 | .09 | .09 | .11** | | | | |
| 2. | Neuroticism | | | | | | | | | | | | |
| | Angry Hostility | 3.23** | .70 | .23 | | 1.11** | .20 | .27 | | | | | |
| | Depression | −.02 | .63 | −.00 | | .03 | .18 | .01 | | | | | |
| | Impulsiveness | 2.48** | .75 | .15 | .10** | .70** | .21 | .15 | .13** | | | | |
| 1. | Gender | −5.45** | .82 | .29 | | −1.67** | .24 | −.31** | | 5.21** | .85 | .34 | |
| | LHC Periods | .83** | .29 | .12 | .11** | .17 | .09 | .09 | .11** | −.08 | .30 | −.02 | .12** |
| 2. | Agreeableness | | | | | | | | | | | | |
| | Trust | −.19 | .69 | −.01 | | −.47* | .20 | −.11 | | 1.02 | .75 | .09 | |
| | Straightforwardness | −4.78** | .78 | −.31 | | −1.04** | .22 | −.24 | | 1.88* | .87 | .15 | |
| | Altruism | −.63 | .87 | −.04 | | −.18 | .25 | −.04 | | −.36 | .97 | −.02 | |
| | Compliance | −3.19** | .75 | −.20 | | −1.04** | .22 | −.23 | | 1.24 | .84 | .10 | |
| | Tendermindedness | 1.33 | .90 | .07 | .18** | .40 | .26 | .07 | .19** | | | | .05** |
| 1. | Gender | −5.45** | .82 | .29 | | −1.67** | .24 | −.31 | | | | | |
| | LHC Periods | .83** | .29 | .12 | .11** | .17 | .09 | .09 | .11** | | | | |
| 2. | Conscientiousness | | | | | | | | | | | | |
| | Competence | −1.53 | 1.06 | −.08 | | −.42 | .31 | −.09 | | | | | |
| | Order | −.80 | .81 | −.05 | | | | | | | | | |
| | Dutifulness | −1.08 | .90 | −.06 | | −.60* | .26 | −.12 | | | | | |
| | Achievement Striving | .46 | .96 | .03 | | .15 | .28 | .03 | | | | | |
| | Self-Discipline | 1.33 | .94 | .09 | | .34 | .26 | .08 | | | | | |
| | Deliberation | −4.57** | .79 | −.30 | .12** | −1.13** | .23 | −.26 | .11** | | | | |

| | | Aggression | | | | ASPD Symptoms | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | B | SE | β | $\Delta R^2$ | B | SE | β | $\Delta R^2$ |
| 1. | Gender | −.27 | .21 | −.06 | .00 | −.36** | .09 | −.18 | .03** |
| 2. | Neuroticism | | | | | | | | |
| | Angry Hostility | .99** | .18 | .29 | | .37** | .08 | .24 | |
| | Depression | .22 | .18 | .07 | | .07 | .08 | .06 | |
| | Impulsiveness | .29 | .19 | .29 | | .12 | .09 | .07 | |
| | Vulnerability | −.11 | .22 | −.03 | .13** | .03 | .10 | .02 | .10** |
| 1. | Gender | −.27 | .21 | −.06 | .00 | −.36** | .09 | −.18 | .03** |
| 2. | Agreeableness | | | | | | | | |
| | Trust | −.40* | .18 | −.11 | | −.29** | .08 | −.18 | |
| | Straightforwardness | −.45* | .20 | −.12 | | −.25** | .09 | −.15 | |
| | Altruism | −.24 | .23 | −.06 | | −.14 | .10 | −.07 | |
| | Compliance | −.96** | .20 | −.25 | | −.23** | .09 | −.13 | |
| | Tendermindedness | .02 | .24 | .01 | .17** | −.01 | .11 | −.01 | .16** |
| 1. | Gender | −.27 | .21 | −.06 | .00 | −.36** | .09 | −.18 | .03** |
| 2. | Conscientiousness | | | | | | | | |
| | Competence | −.16 | .25 | −.04 | | −.27* | .12 | −.14 | |
| | Dutifulness | −.51* | .23 | −.13 | | −.29** | .10 | −.16 | |
| | Achievement Striving | | | | | −.13 | .11 | −.03 | |
| | Self-Discipline | | | | | .26** | .10 | .16 | |
| | Deliberation | −.35 | .21 | −.10 | .05** | −.34** | .09 | −.20 | .13** |

*$p \leq .05$, **$p \leq .01$

5% and 13% of the variance in the outcome variables, with the facets of dutifulness and deliberation making the most consistent contributions.

### Hierarchical Analyses—Using Facets From All Three Domains

This final set of analyses used the previous analyses to determine which facets should be entered into the regression in order to predict the five antisocial behavior variables. By doing this, several questions could be examined. First, which personality facets would predict a significant amount of unique variance when competing with facets from other domains? Second, how much variance would this combination of facets be able to predict and would this differ depending on the outcome examined? Third, would the significance of various facets differ across the antisocial behavior outcomes or would the same ones be important across the variables?

As can be seen in Table IV, the proportion of variance accounted for by the facets was significant and relatively large for each outcome, ranging from 4% (onset) to 21% (stability, variety, ASPD symptoms). In addition, there was general consistency for three facets: straightforwardness, compliance, and deliberation. Straightforwardness made an independent contribution in five of five analyses in which it was included. Compliance was a significant predictor in three of four analyses in which it was included. Finally, the facet of deliberation was significantly related to the outcome measure in three of three analyses. Four other facets made a significant contribution to one antisocial outcome: high angry hostility, low trust, low dutifulness, and high self-discipline. Interestingly, the facets of Neuroticism rarely made independent contributions.

## DISCUSSION

There has been a recent call for a change in the way descriptive research is conducted in the field of personality and antisocial behavior. After comprehensively reviewing the literature on the relations between the major structural models of personality and antisocial behavior, Miller and Lynam [2001] made several recommendations. One of their primary recommendations was that researchers use personality models such as the Five Factor Model or the Tellegen's three factor model because they provide scores for both primary domains, as well as second order facets. Miller and Lynam argued that working at the facet level will provide further insight and specificity to our understanding of these relations.

This study examined how the subordinate facets of the Five Factor Model related to various antisocial behaviors including aggression. In particular, we looked at how the facets from the domains of Neuroticism, Agreeableness, and Conscientiousness related to the stability of conduct problems, variety of conduct problems, onset of conduct problems, antisocial personality disorder symptoms, and aggression. We chose to use only the facets from these three personality domains because results from the recent meta-analysis strongly suggest that these are the primary dimensions relevant to antisocial behavior. In the current study, we looked at zero order (and partial) correlations, as well as regression analyses, in order to examine which of the facets provided the most significant contribution to our understanding of these variables.

In looking at the correlations between the FFM facets and these outcome variables, several issues become clear. In regard to gender, the results were extremely consistent. In fact, there were no significant gender differences for any of the 90 correlations, suggesting that

**Table IV. Predicting Antisocial Behavior From the Combined Neuroticism, Agreeableness, and Conscientiousness Facets**

| | | B | SE | β | $\Delta R^2$ |
|---|---|---|---|---|---|
| Stability of Conduct Problems | | | | | |
| 1. | Gender | −5.45** | .82 | −.29 | |
| | LHC Periods | .83** | .29 | .12 | .11** |
| 2. | N - Angry Hostility | .84 | .70 | .06 | |
| | N - Impulsiveness | .20 | .79 | .01 | |
| | A - Straightforwardness | −4.12** | .72 | −.27 | |
| | A - Compliance | −1.89* | .82 | −.12 | |
| | C - Deliberation | −2.72** | .75 | −.18 | .21** |
| Variety of Conduct Problems | | | | | |
| 1. | Gender | −1.67** | .24 | −.31 | |
| | LHC Periods | .17 | .09 | .09 | .11** |
| 2. | N - Angry Hostility | .34 | .22 | .08 | |
| | N - Impulsiveness | .21 | .23 | .04 | |
| | A - Trust | −.34 | .20 | −.08 | |
| | A- Straightforwardness | −.86** | .22 | −.19 | |
| | A- Compliance | −.67** | .24 | −.14 | |
| | C- Dutifulness | −.13 | .23 | −.03 | |
| | C - Deliberation | −.48* | .23 | −.11 | .21** |
| Onset of Conduct Problems | | | | | |
| 1. | Gender | 5.21 | .30 | −.02 | |
| | LHC Periods | −.08** | .85 | .34 | .12** |
| 2. | A- Straightforwardness | 2.56** | .73 | .20 | .04** |
| CTS –Aggression | | | | | |
| 1. | Gender | −.27 | .21 | −.06 | .00 |
| 2. | N - Angry Hostility | .47* | .19 | .14 | |
| | A - Trust | −.30 | .18 | −.09 | |
| | A - Straightforwardness | −.41* | .20 | −.11 | |
| | A- Compliance | −.73** | .22 | −.19 | |
| | C- Dutifulness | −.24 | .19 | −.06 | .18** |
| ASPD Symptoms | | | | | |
| 1. | Gender | −.36** | .09 | −.18 | .03*** |
| 2. | N - Angry Hostility | .12 | .09 | .10 | |
| | A - Trust | −.26** | .08 | −.16 | |
| | A - Straightforwardness | −.19* | .09 | −.12 | |
| | A - Compliance | −.11 | .10 | −.06 | |
| | C - Competence | −.19 | .12 | −.09 | |
| | C - Dutifulness | −.25* | .10 | −.13 | |
| | C - Self-discipline | .24** | .09 | .15 | |
| | C - Deliberation | −.25** | .09 | −.15 | .21** |

*$p \leq .05$, **$p \leq .01$

personality operates in a relatively uniform fashion across gender. As predicted, the facets of Agreeableness were related to all five outcome variables with striking consistency. Twenty-four out of the 30 correlations (80%) between the Agreeableness facets and the outcome variables were significant. Upon examining these results it is obvious that only the facet of modesty was not related to antisocial behavior and aggression. However, in general, it is difficult to make much of a distinction between the various Agreeableness facets. Similarly, as predicted, the facets of Conscientiousness were also consistently related to most antisocial behavior outcomes – 60% of the correlations were significant. The primary exception in this case was the facet of order. In addition, none of the Conscientiousness facets seemed to be an important correlate of the onset of conduct problems. Finally, 47% of the relations between the Neuroticism facets and antisocial behavior were significant. As discussed earlier, the significant relations were driven primarily by the facets of high angry hostility and high impulsiveness. Anxiousness, self-consciousness, and vulnerability to stress did not appear to be important traits in understanding antisocial behavior or aggression.

In order to examine these findings at a more detailed level, two sets of regression analyses were conducted. The first set looked for consistent unique predictors within a given domain. Within each personality domain, only a subset of facets consistently emerged as unique predictors. In the case of Neuroticism, although four facets were entered in the analyses, only angry hostility and impulsiveness emerged as consistent predictors. In the case of Agreeableness, five facets were entered as predictors, but only straightforwardness and compliance emerged consistently. Finally, results were similar for the facets of Conscientiousness; although five facets were entered, only dutifulness and deliberation emerged consistently.

In the second set of regression analyses, the unique predictors from the various personality domains simultaneously predicted the outcome variables. The results from these final analyses provide a clear picture of the role that the individual facets played across the various outcome measures. In fact, the roles of three specific facets stand out: low straightforwardness (an individual's tendency to be honest and sincere versus manipulative and deceptive), low compliance (an individual's tendency to react to interpersonal conflict with an aggressive, competitive attitude versus a meek, deferential strategy), and low deliberation (the ability to think and consider consequences of one's behavior before acting).

The role of the Neuroticism facets is quite interesting. Despite two of the facets, angry hostility and high impulsiveness, having the chance to make a significant contribution to most of the outcomes, angry hostility was significant only once, while impulsiveness did not account for a significant amount of unique variance in any of the antisocial/aggression outcomes. Because these facets were related to the outcomes without the inclusion of Agreeableness and Conscientiousness facets, it is clear that their relation to the outcomes was better accounted for by facets of Agreeableness and Conscientiousness. This is not completely surprising as both of these facets have substantial secondary loadings. Although the facet of angry hostility, which measures the tendency to experience anger and frustration, has its highest loading on the domain of Neuroticism, it has a strong secondary loading on Agreeableness [Costa and McCrae, 1992]. In fact, angry hostility's highest correlation in the normative sample was with compliance [Appendix F, Costa and McCrae, 1992]. Similarly, the facet of impulsiveness, which assesses a difficulty resisting urges and cravings that result from negative affect, has its primary loading on Neuroticism but is also substantially related to both Agreeableness and Conscientiousness; impulsiveness has its highest correlation with the facet of deliberation in the normative sample [Appendix F, Costa and McCrae, 1992].

This suggests that these facets were significant predictors originally because they were acting as proxy measures of compliance and deliberation. However, once better measures of these dimensions were included these facets dropped out.

The overall domination of the facets of low straightforwardness, compliance, and deliberation deserves further consideration. The results suggest that the antisocial individual can be described as manipulative, deceitful, oppositional, competitive, and having a tendency to act without thinking. Although there is some conceptual overlap between this description and criminal activities, there is no predictor-criterion overlap in the assessment. The results are quite consistent with previous empirical work and theorizing. For example, Axelrod et al. [1997] found that the correlations between low straightforwardness and antisocial personality disorder were the highest of all the Agreeableness facets for both a self-report measure and a structured interview. Findings for deliberation are consistent with a number of individual-difference accounts of offending that highlight the central role of impulsivity [Gottfredson and Hirschi, 1990; Lynam, 1996; Moffitt, 1993b; Newman and Wallace, 1993].

The similarity of prediction across all measures of antisocial behavior also deserves comment. Except for the age at onset variable, which was not well-predicted by personality, the independent predictors were the same for stability and variety of conduct problems, number of symptoms of antisocial personality disorder, and aggression. Consistent with generalist theories of crime, these results suggest that the personality contributors to various manifestations of antisocial behavior are quite similar.

There are several possible explanations for the poor prediction of the age of onset variable by the personality facets. First, because of the one-shot (or in this case, two) nature of an "onset" variable, it is, by nature, a less reliable behavioral index and a less valid indicator of general propensity to crime. In the case of antisocial behavior, other variables such as opportunity or social context may be more predictive of the onset of these behaviors. Because we limited the analyses to only people who evidenced conduct problems in two consecutive time periods, there may have been limited variability for the personality traits to predict.

Finally, the findings from the current study may also have intervention implications. All three of the personality facets most strongly associated with antisocial behavior and aggression are traits which can be identified in childhood, allowing for earlier and presumably more effective interventions. Parents can recognize oppositional, defiant attitudes and behavior (lack of compliance) in their children at a relatively early age; Oppositional Defiant Disorder is a recognized disorder, usually evident before eight years of age, according to the fourth edition of Diagnostic and Statistical Manual of Mental Disorders [DSM-IV; American Psychiatric Association, 1994]. Similarly, parents of troubled children often recognize a tendency to be dishonest and manipulative, or to stretch the truth in their young children; this trait is one of the core symptoms of Conduct Disorder [APA, 1994] which may be diagnosed as early as age six, but is usually diagnosed in late childhood. The case is similar for impulsive behavior which appears as a defining characteristic in the diagnosis of Attention Deficit Hyperactivity Disorder, a disorder with a remarkably early age of onset: before age five in 95% of cases [Barkley, 1982], and an average of 2.9 in one study [Stewart and Behar, 1983]. Finally, this combination of personality traits (deceitfulness, lack of compliance, and impulsivity) is quite similar to Lynam's description of the fledgling psychopath [Lynam, 1996] and with the lack of control dimension identified among three-year-olds by Caspi et al. [1995] found to predict antisocial behavior in late adolescence.

Not only can these traits be identified early, they can likely be addressed at an early age through parent training, behavioral contingency plans, and stimulant medication.

For example, with a child who is prone to lying, parents are taught to confer punishments upon the suspicion of misbehavior or lying rather than trying to induce a confession or requiring concrete evidence of the misbehavior [Frick, 1998]. Similarly, stimulant medications like Ritalin, although not a panacea, can help individuals decrease the impulsivity that is characteristic of their behavior, especially when paired with effective behavior management training for parents.

### Limitations

Finally, as in any case in which findings are based on cross-sectional data, one can not make causal attributions. In the current paper we have used the term "predict" to refer to statistical prediction rather than prediction in relation to timing or ordering. In fact, in the case of several of the variables, our personality traits were "predicting" backwards because the outcome measures had been taken a year earlier. This may show a reversal in relations between personality and antisocial behavior/aggression. It is possible, although we feel unlikely, that antisocial and/or aggressive behavior may result in the elevation or depression of specific personality trait scores. However, given the early rise of temperament [e.g., Caspi and Silva, 1995] and the stability of personality [McCrae and Costa,1990; McGue et al., 1993; Roberts and DelVecchio, 2000] it is unlikely that the antisocial behavior/aggressive behaviors lead to the personality configurations. It is more likely that individuals' personality traits led to, either directly or indirectly, these problematic behaviors.

## REFERENCES

American Psychiatric Association. 1994. Diagnostic and statistical manual of mental disorders (DSM-IV) (4th ed.). Washington, DC: American Psychiatric Association.

Axelrod ST, Widiger T, Trull T, Corbitt E. 1997. Relations of five-factor model antagonism facets with personality disorder symptomatology. J Pers Assess 69:297–313.

Barkley RA. 1982. Guidelines for defining hyperactivity in children: Attention deficit disorder with hyperactivity. In: Lahey B, Kazdin A, editors. Advances in clinical child psychology. New York: Plenum. p 137–175

Carey G, Goldman D. 1997. The genetics of antisocial behavior. In: Stoff D, Breiling J, Maser J, editors. Handbook of antisocial behavior. New York: Wiley and Sons. p 243–254.

Caspi A, Henry B, McGee RO, Moffitt TE, Silva PA. 1995. Temperamental origins of child and adolescent behavior problems: From age 3 to age 15. Child Devel 66:55–68.

Caspi A, Moffitt TE, Thornton A, Freedman D, Amell J, Harrington H. Smeijers J, Silva PA. 1996. The life history calendar: A research and clinical assessment method for collecting retrospective event-history data. Int J Meth Psych Res 6:101–14.

Caspi A, Silva PA. 1995. Temperamental qualities at age 3 predict personality traits in young adulthood: Longitudinal evidence from a birth cohort. Child Devel 66:486–498.

Clayton R, Cattarello A, Johnstone B. 1996. The effectiveness of Drug Abuse Resistance Education (Project DARE): 5–year follow-up results. Prev Med 25:307–318.

Conley JJ. 1984. Longitudinal consistency of adult personality: Self-reported psychological characteristics across 45 years. J Pers Soc Psychol 47:1325–1333.

Costa PT, McCrae RR. 1988. Personality in adulthood: A six-year longitudinal of self-reports and spouse ratings on the NEO Personality Inventory. J Pers Soc Psychol 54:853–863.

Costa PT, McCrae RR. 1990. Personality disorders and the five-factor model of personality. J Pers Dis 4:362–371.

Costa PT, McCrae RR. 1992. Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual. Odessa, FL: Psychological Assessment Resources.

Costa PT, McCrae RR. 1995a. Domains and facets: Hierarchical personality assessment using the revised NEO personality inventory. J Pers Assess 64:21–50.

Costa PT, McCrae RR. 1995b. Primary traits of Eysenck's P-E-N model: Three- and five-factor solutions. J Pers Soc Psychol 69:308–317.

Costa PT, McCrae RR, Dye DA. 1991. Facet scales for Agreeableness and Conscientiousness: A revision of the NEO Personality Inventory. Pers Individ Diff 12:887–898.

Digman J. 1990. Personality structure: Emergence of the five factor model. Ann Rev Psychol 41:417–440.

Epstein S. 1979. The stability of behavior: I. On predicting most of the people much of the time. J Pers Soc Psychol 37:1097–1126.

Freedman D, Thornton A, Camburn D, Alwin D, Young-DeMarco L. 1988. The life history calendar:A technique for collecting retrospective data. Sociol Method 18:37–68.

Frick P. 1998. Conduct disorders and severe antisocial behaviors. New York: Plenum Press.

Goldberg LR, Rosolack TK. 1994. The big five factor structure as an integrative framework: An empirical comparison with Eysenck's P-E-N model. In: Halverson C, Kohnstamm G, Martin R, editors. The developing structure of temperament and personality from infancy to adulthood. Hillsdale, NJ: Lawrence Erlbaum Associates. p 7–37.

Gottfredson M, Hirschi T. 1990. A general theory of crime. Stanford, CA: Stanford University Press.

Jackson DN, Paunonen SV. 1985. Construct validity and the predictability of behavior. J Pers Soc Psychol 49:554–570.

John OP. 1990. The "Big Five" factor taxonomy: Dimensions of personality in the natural language and questionnaires. In: Pervin LA, editor. Handbook of personality: Theory and research**.** New York: Guilford. p 66–100.

John OP, Caspi A, Robins RW, Moffitt TE, Stouthamer-Loeber M. 1994. The "Little Five": Exploring the nomological network of the Five-Factor Model of personality in adolescent boys. Child Devel 65:160–178.

John OP, Srivastava S. 1999. The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In: Pervin LA, editor. Handbook of personality. Theory and research. New York: Guilford. p 102–138.

Lilienfeld SO, Wood J, Garb H. 2000. The scientific status of projective techniques. Psychol Science Public Int 1:27–59.

Lynam DR. 1996. The early identification of chronic offenders: Who is the fledgling psychopath? Psychol Bull 120:209–234.

Lynam DR. 2002. Psychopathy from the perspective of the Five Factor Model. In: Costa PT, Widiger T, editors. Personality disorders and the five-factor model of personality (2nd Ed.) Washington, D.C.: American Psychological Association. p 325–350.

Lynam DR, Milich R, Zimmerman R, Novak SP, Logan TK, Martin C, Leukefeld C, Clayton R. 1999. Project DARE: No effects at 10–year follow-up. J Consult Clin Psychol 67:590–593.

McCrae RR, Costa PT. 1990. Personality in adulthood. New York: Guilford.

McGue M, Bacon S, Lykken D. 1993. Personality stability and change in early adulthood: A behavioral genetic analysis. Dev Psychol 29:96–109.

Miller JD, Lynam D. 2001. Structural models of personality and their relation to antisocial behavior: A meta-analytic review. Criminology.

Miller JD, Lynam D, Widiger T, Leukefeld C, Clayton R. 2001. Personality disorders as an extreme variant of common personality dimensions: Can the Five Factor Model represent psychopathy. J Pers 69: 253–276.

Mischel W. 1968. Personality and assessment. New York: Wiley.

Moffitt TE. 1993b. Adolescence-limited and life-course persistent antisocial behavior: A developmental taxonomy. Psychol Rev 100:674–701.

Newman JP, Wallace JF. 1993. Divergent pathways to deficient self-regulation: Implications for disinhibitory psychopathology in children. Clin Psychol Rev 13:699–720.

Norman WT, Goldberg LR. 1963. Raters, ratees, and randomness in personality structure. J Pers Soc Psychol 4:681–691.

Paunonen SV, Ashton MC. 2001. Big five factors and facets and the prediction of behavior. J Pers Soc Psychol 81:524–539.

Roberts B, DelVecchio W. 2000. The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies. Psychol Bull 126: 3–25.

Robins L. 1966. Deviant Children Grown Up. Baltimore, MD: Williams and Wilkins Company.

Robins L, Cottler L, Bucholz K, Compton W. 1997. Diagnostic Interview Schedule for DSM-IV (DIS-IV). St. Louis, Washington University School of Medicine.

Robins L, Helzer J, Ratcliff K, Seyfried W. 1982. Validity of the Diagnostic Interview Schedule, Version II: DSM-III diagnoses. Psychol Med 12:855–870.

Sampson RJ, Laub J. 1990. Crime in the Making. Cambridge, MA: Harvard University Press.

Stewart MA, Behar D. 1983. Subtypes of aggressive conduct disorder. Acta Psych Scand 68:178–185.

Straus M, Gelles R. 1990. Physical violence in American families: Risk factors and adaptation to violence in 8,145 families. New Brunswick, NJ: Transaction Publications.

Tellegen A. 1985. Structures of mood and personality and their relevance to assessing anxiety with an

emphasis on self-report. In: Tuma AH, Maser, JD, editors. Anxiety and the anxiety disorders. Hillsdale, NJ: Erlbaum. p 681–706.

Tellegen A, Lykken DT, Bouchard TJ, Wilcox KJ, Segal NL, Rich S. 1988. Personality similarity in twins reared apart and together. J Pers Soc Psychol 54:1031–1039.

Widiger TA, Lynam DR. 1998. Psychopathy as a variant of common personality traits: Implications for diagnosis, etiology, and pathology. In: Millon T, editor. Psychopathy: Antisocial, criminal, and violent behavior. New York: Guilford. p 171–187.

Wiggins JS, Pincus AL. 1992. Personality: Structure and assessment. Ann Rev Psychol 43:473–504.