Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

HHS Public Access

Author manuscript

Clin Psychol Sci. Author manuscript; available in PMC 2017 May 01.

Published in final edited form as:

Clin Psychol Sci. 2016 May ; 4(3): 572–590. doi:10.1177/2167702615622384.

Identifying Essential Features of Juvenile Psychopathy in the Prediction of Later Antisocial Behavior: Is There an Additive, Synergistic, or Curvilinear Role for Fearless Dominance?

Colin E. Vize,
Purdue University

Donald R. Lynam,
Purdue University

Joanna Lamkin,
University of Georgia

Joshua D Miller, and
University of Pittsburgh Medical Center

Dustin Pardini
University of Pittsburgh Medical Center

Abstract

Despite years of research, and inclusion of psychopathy DSM-5, there remains debate over the fundamental components of psychopathy. Although there is agreement about traits related to Agreeableness and Conscientiousness, there is less agreement about traits related to Fearless Dominance (FD) or Boldness. The present paper uses proxies of FD and Self-centered Impulsivity (SCI) to examine the contribution of FD-related traits to the predictive utility of psychopathy in a large, longitudinal, sample of boys to test four possibilities: FD 1. assessed earlier is a risk factor, 2. interacts with other risk-related variables to predict later psychopathy, 3. interacts with SCI interact to predict outcomes, and 4. bears curvilinear relations to outcomes. SCI received excellent support as a measure of psychopathy in adolescence; however, FD was unrelated to criteria in all tests. It is suggested that FD be dropped from psychopathy and that future research focus on Agreeableness and Conscientiousness.

Keywords

psychopathy; Pittsburgh Youth Study; Fearless Dominance; Agreeableness; Conscientiousness

Address correspondence to: Donald R. Lynam, Purdue University, Department of Psychological Sciences, 703 Third Street, West Lafayette, IN 47907-2081, Phone: 765-496-9025; Fax: 765-496-2670; dlynam@purdue.edu.

Author Contributions

DRL, CEV, and JDM developed the study concept. DRL and DP collected and archived the original PYS data, and DP provided guidance in its use. JDM and JL oversaw the collection of the two undergraduate samples that allowed proxies to be built using the archived data. CEV performed the majority of the data analysis under the supervision of DRL. CEV and DRL drafted the paper and received critical feedback and revisions from JL, JDM, and DP. All authors approved the final version of the paper for submission and the current order of authorship.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Assessment is core to psychology and psychiatry. One cannot study a construct, whether it be a diagnosis, a syndrome, a trait or a mood, if one cannot adequately assess it. Adequate assessment requires defining the boundaries of the construct under study. One must be able to say what the construct is and what it is not. Which features are central, which are peripheral, and which do not belong. There are sometimes disagreements about the content of the construct and the construct may change over time as new evidence becomes available. This can be seen in the way that hyperactivity, impulsivity, and attention problems have jockeyed for places and centrality across versions of the DSM in the diagnostic criteria for what is now called Attention Deficit Hyperactivity Disorder. The field of psychopathy currently finds itself in a state in which researchers are actively debating the same issues—which features are central, which are peripheral, and which do not belong? In this manuscript, we review this debate which centers on a set of traits alternatively called fearless dominance, boldness, or emotional stability[1], and we test several hypotheses put forward by some scholars as to the manner in which these features operate in relation to key parts of psychopathy's nomological network.

Psychopathy is a personality disorder (PD) composed of a variety of traits including callousness, self-absorption, grandiosity, superficial charm, impulsivity, and irresponsibility (Cleckley, 1941; Hare, 2003). Much has been learned about the construct across the last 25 years, yielding a number of important findings. Research has shown that psychopathy has a childhood manifestation that can be reliably and validly assessed and that looks much like its manifestation in adulthood (e.g., Frick, 2002, 2009). The construct shows relatively high stability across adolescence and into adulthood (Lynam, Caspi, Moffitt, Loeber, & Stouthamer-Loeber, 2007; Lynam, Charnigo, Moffitt, Raine, Loeber, & Stouthamer-Loeber, 2009; Neumann, Wampler, Taylor, Blonigen, & Iacono, 2011). It bears robust relations to antisocial behavior, aggression, substance use, and recidivism (Declercq, Willemsen, Audenaert, & Verhaeghe, 2012; Hawes, Boccaccini, & Murrie, 2013; Neumann, Hare, & Pardini, in press). Recent research has even begun to uncover possible neurobiological underpinnings of psychopathy (Seara-Cardoso & Viding, in press). Despite this knowledge, there remains disagreement about the core features of psychopathy.

Over the past 20 years, multiple trait-based models of psychopathy have been proposed to describe and summarize the traits comprising psychopathy. These models include varying numbers of components ranging from to 2 to 8 factors (Hare, 2003; Lilienfeld & Widows, 2005; Lynam & Widiger, 2007; Patrick, Fowles, & Krueger, 2009; see Miller and Lynam, 2015, for a review). Although there is substantial overlap in the components of these models (e.g., Miller & Lynam, 2015), there is disagreement as well. Agreement is excellent for two broad traits--one dealing with interpersonal relatedness and the other with impulse control. All models include traits that fall under the broad umbrella of Antagonism (e.g., low Agreeableness, meanness, grandiose-manipulative) indexing selfishness, arrogance, coldness, callousness, cynicism, and manipulativeness. The other broad trait present across all models addresses deficient behavioral constraint (e.g., low Conscientiousness, disinhibition, impulsive-irresponsible) and assesses lower-order traits related to

[1]Throughout the manuscript, we reference these traits collectively as FD-related traits, but will use more specific terms when discussing specific studies and measures.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

disobligation, impersistence, thrill seeking, and rashness. An additional subset of traits dealing with interpersonal warmth and dominance and the absence of negative self-directed emotions (i.e., FD-related traits) are less well-agreed upon.

All theorists allow that these latter traits are present in classic descriptions of psychopathy, and some models have these traits explicitly represented within in them. For example, these traits are referenced as Fearless Dominance (i.e., social influence, stress immunity, and fearlessness) in Lilienfeld's Psychopathic Personality Inventory (Lilienfeld & Andrews, 1996) and serve as one of two core higher-order factors in his model of psychopathy with Self-Centered Impulsivity, composed of Rebellious Nonconformity, Machiavellian Egocentricity, Carefree Nonplanfulness, and Blame Externalization, being the other factor. Similar traits appear in Patrick's Triarchic Model of Psychopathy (Patrick et al., 2009) as Boldness, composed of "confidence and social assertiveness, emotional resiliency, and venturesomeness" and constituting one of the three major components of psychopathy with Meanness and Disinhibition as the other two. These traits also appear, as indicators of high Extraversion and low Neuroticism, in the model of Lynam and Miller (2012). Most recently, and perhaps most importantly, these traits (i.e., high attention-seeking, low withdrawal, and low anxiousness) appear as a specifier for psychopathy in the DSM-5 alternative model (i.e., Section III) for personality disorders (American Psychiatric Association, 2013). This is the first time that psychopathy *per se* has appeared as a diagnosis in the DSM. There are two components to the DSM-5 Section III model that are required for a diagnosis of psychopathy. First, an individual must meet criteria for Antisocial PD (APD) which includes traits from both Antagonism (i.e., manipulativeness, callousness, deceitfulness, and hostility) and Disinhibition (i.e., risk taking, impulsivity, irresponsibility). Second, the individual must also possess the psychopathy specific traits (PS; i.e., low anxiousness and withdrawal; high attention seeking). Although these FD-related traits appear in multiple models, theorists disagree as to the centrality and importance of these traits. Lilienfeld (Lilienfeld, Watts, Francis Smith, Berg & Latzman, in press) and Patrick (Patrick & Drislane, in press) believe that the more recent inclusion of these traits in various psychopathy assessments, in addition to those traits associated with Antagonism and Disinhibition, represent an important advance to the assessment and study of psychopathy that is consistent with historical conceptualizations of psychopathy (i.e., Cleckley, 1941). In fact, in the conception of psychopathy put forth by Lilienfeld et al. and present in Section III of the DSM-5 (American Psychiatric Association, 2013), these traits are necessary for a diagnosis of psychopathy (primary psychopathy for Lilienfeld and colleagues).

The centrality of these traits has been called into question, however, by Miller and Lynam (in press; Lynam & Miller, 2012; Miller & Lynam, 2012) who suggest that "although these traits are found in several assessment inventories, they are nonessential, more surface than source traits" (p. 14). Miller and Lynam suggest that "that these traits serve to draw the eye when they are found among individuals who are low in agreeableness and conscientiousness, but that there is little extant data at this time suggesting that these traits bear causal relations to the other traits characterizing psychopathy or to the behaviors that make the construct important (e.g., antisocial behavior)" (p. 14). They support their view using results from a meta-analysis (Miler & Lynam, 2012; Lynam & Miller, 2012) examining the two factors of the PPI—Fearless Dominance (FD) and Self-centered Impulsivity (SCI). Results revealed

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

that although the total PPI/PPI-R and the SCI factor scores functioned as predicted in relation to a variety of criteria (e.g., other psychopathy indicators, personality, personality disorders, externalizing behaviors, and internalizing behaviors), the FD factor did not. Specifically, the SCI factor demonstrated large, positive correlations with other psychopathy measures, strong negative relations with indicators of Agreeableness and Conscientiousness, and robust relations with a variety of negative externalizing outcomes including aggression, antisocial behavior, substance use, and antisocial personality disorder. Conversely, FD manifested negligible correlations with other psychopathy indicators, Agreeableness and Conscientiousness, and all externalizing behaviors; strong positive relations with extraversion, sensation seeking, fun seeking, and narcissism; and strong negative correlations with neuroticism and internalizing psychiatric symptoms. Based on these findings, Miller and Lynam concluded that FD "assesses stable extraversion, which may be an associated feature or a diagnostic specifier for psychopathy. The feature itself is not essential and, in the absence of evidence of impairment, maladaptivity, or high scores on traits related to meanness and disinhibition, does not itself index psychopathy" (p. 320).

These conclusions were underscored in a second meta-analysis by Marcus, Fulton, and Edens (2013). These authors found that FD and SCI were weakly correlated with each other and not correlated at all within offender samples. The SCI factor was found to be correlated with other validated measures of psychopathy as well as measures of antisocial personality features and various constructs related to externalizing behavior (e.g. substance use, impulsivity). The FD factor on the other hand only showed modest correlations with other measures of psychopathy, did not correlate with antisocial personality features, was negatively correlated with negative emotionality, and was positively related to positive emotionality. The authors concluded that, "One might argue that the SCI factor is the "true" measure of psychopathy whereas FD, although conceptually interesting and rooted in Cleckley's original conceptualization, is not really central to the disorder" (p. 72).

The meta-analyses mentioned above are a part of a larger debate within the field that has focused on the necessity and sufficiency of FD- related traits (i.e., FD, Boldness, emotionally stable extraversion, and the DSM-5 PS) to psychopathy. In a series of responses to the Miller and Lynam (2012) and Marcus et al. (2013) meta-analyses, Lilienfeld and colleagues (e.g., Blonigen, 2013; Lilienfeld et al., 2012) have addressed what they see as misconceptions about FD-related traits, and argue that such traits have consistently been included in earlier conceptualizations of psychopathy, spanning the work of Karpman, Lykken, and Cleckley. They argue that the presence of FD-related traits give rise to the full picture of psychopathy when there are also elevated levels of SCI-related traits. In these responses and other writings, a number of alternative possibilities have been raised for the role of FD traits in psychopathy. We describe these alternatives below.

FD Is Important Earlier in the Lifecourse

It is important to note that much of the work that has been done on the validity of the FD-related traits has typically used adult samples and been cross-sectional in nature. There is a need for longitudinal studies that examine the role of FD-related traits over time and their predictive validity in relation to future psychopathy. For example, it is possible that FD-

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

related traits are more distal risk factors for psychopathy that mark something different early in development (e.g., a risky temperament) than they do later in development (e.g., an unrealized risk), or that it requires certain developmental contexts or other traits to produce psychopathy later in life.

An influential theory proposed by Lykken (1995) utilizes a developmental framework in an attempt to uncover the origins of the psychopathic personality. Building off of his earlier work on the role of fearlessness in psychopathy (Lykken, 1957) and the research that has accumulated since his initial study (e.g., Patrick, Cuthbert, & Lang, 1994), Lykken argued that the relationship between fearlessness and antisocial outcomes is determined by the process of socialization. In other words, the developmental outcomes of individuals who have early dispositions towards fearlessness in childhood differ based on how such individuals are socialized. Lykken theorized that fearless children (i.e., those high in FD-related traits) who are raised by exceptionally skilled parents would be more likely to develop into relatively well-functioning adults while fearless children raised in non-supportive environments with absent, overly harsh, or lax parental involvement would be more likely to develop behaviors and traits associated with psychopathy. Lykken argued that low anxiousness/fearlessness may not always manifest in maladaptive ways, however, as the traits that make a psychopathic individual interpersonally dominant and charming may be the same as the traits that may motivate one to act heroically or to be a prosocial daredevil. Such theorizing raises two possibilities. First, adults high in FD-related traits but without other core traits (e.g., antagonism and disinhibition) may represent the successful adult manifestation of the childhood risk factor; that is, they are the individuals who, despite initial risk by virtue of a fearless temperament, managed to develop into well-functioning adults. If this is correct, examining the risk factor earlier in development, when it remains a risk factor and not a marker of successful development, should reveal its negative effects on later outcomes. Second, FD-related traits may confer risk only in the presence of certain developmental contexts; although Lykken's hypothesis is focused on parenting and rearing practices (e.g., Miller, Maples-Keller, & Lynam, in press), it is possible that other factors may also moderate the impact of FD-related traits over the course of development. For example, FD-related traits in childhood and adolescence may predict adult psychopathy but only at low or high levels of a moderating variable like IQ or the quality of a child's neighborhood.

FD-related Traits May Interact With Other Core Features

Several researchers have suggested that FD-related traits may interact with SCI-related traits (i.e., antagonism, disinhibition, meanness, SCI) to produce the full clinical picture of psychopathy (Blonigen, 2013; Lilienfeld et al., 2012; Markus et al., 2013). There are two possibilities for this interaction; FD-related traits may be more strongly related to traditional psychopathy-related outcomes in the presence of high levels of SCI-related traits or SCI-related traits may be more strongly related to such outcomes in the presence of FD-related traits. The new, alternative model of personality disorders included in Section III of the DSM (DSM-5; American Psychiatric Association, 2013) represents the latter possibility in which FD-related traits serve as diagnostic specifiers for SCI-related traits. The alternative model for personality disorders in the DSM-5 characterizes personality disorders, in part, through

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

the use of pathological personality traits. The alternative model for antisocial personality disorder (APD) includes seven pathological traits: manipulativeness, callousness, deceitfulness, hostility, risk taking, impulsivity, and irresponsibility. These maladaptive traits make up the essential core of APD and also cover many of the essential features of psychopathy as well (Lynam & Vachon, 2012). However, the DSM-5 allows one to specify whether additional psychopathic features – FD-related traits – are also present. These hypotheses have been examined cross-sectionally with mixed results such that some studies have found support (e.g., Rock, Sellbom, Ben-Porath, & Salekin, 2013) but several others have not (e.g., Miller, Maples-Keller, & Lynam, in press; see Lilienfeld et al., 2012 for other examples).

FD Bears Curvilinear Relations to Maladaptive Outcomes

In explaining why FD-related traits are unrelated to maladaptive outcomes typically associated with psychopathy, Blonigen (2013) suggested that the relation between FD-related traits and maladaptive outcomes or their interaction with SCI-related traits may be curvilinear. He wrote (p. 88): “a certain amount of boldness, fearlessness, confidence, and social dominance is likely to engender resilience in the face of adversity and success in a number of important life domains; however, an overabundance of such traits is likely to be expressed as narcissism, arrogance, recklessness, and risk-taking…Similar to the interactive effects of FD and SCI, curvilinear effects have rarely been tested. However, they are certainly plausible and may work in concert with the moderational processes suggested by Marcus et al. (2012) in the prediction of maladaptive outcomes.” According to this perspective, FD-related traits should be related to maladaptive outcomes at their highest points. To our knowledge, there have been no empirical tests of these hypotheses, either cross-sectionally or prospectively, to date.

The Present Study

The present study evaluates the alternative possibilities in which FD-related traits may confer risk for psychopathy and psychopathy-related outcomes in a high-risk longitudinal sample of male youths from the Pittsburgh Youth Study (PYS). The middle cohort of the PYS was assessed on a wide array of measures designed to assess antisocial behavior and related features. The youth were initially assessed between 10 and 13 years old, and again when they were young adults between ages 22 and 26. Using this longitudinal sample, we create proxy measures of FD and SCI. We chose to proxy these specific scales according to the PPI’s conceptualization as multiple researchers have used a variety of personality inventories to do so in other samples with good success (e.g., Benning, Patrick, Blonigen, Hicks, & Iacono, 2005; Ross, Benning, Patrick, Thompson, & Thurston, 2009). With these proxies, we ask several questions about the role of FD-related traits to psychopathy. First, we ask does FD assessed earlier in the lifecourse, at age 13, predict negative outcomes? Second, we ask whether FD-related traits interact with SCI-related traits to predict negative outcomes. Third, we ask whether early-assessed FD interacts with parenting and other individual differences to predict negative outcomes. Finally, we ask whether a curvilinear relation exists between early-assessed FD and maladaptive outcomes.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Method

Participants

Participants are members of the middle sample of the Pittsburgh Youth Study (PYS). Initial recruitment was conducted from 1987-1988. Boys attending the fourth grade in the public school system in inner-city Pittsburgh were randomly selected from schools across the city. Of the families that were contacted for inclusion in the study, 86% of the boys and their parents agreed to participate in a screening assessment (N=868). The screening identified high-risk participants; specifically, about 250 boys (30% of each sample) with the most severe disruptive behavioral problems based on caretaker, teacher, and self-reports were identified in each sample. In addition, an equivalent-sized random subset of the remaining boys (70% of the sample) was selected to complete the sample. The selection process resulted in 506 boys for the middle sample, of which approximately half were high risk (n=259) and half non-high risk (n=247). The final sample had approximately equal representation of White and African American boys. The sample was assessed biannually for six assessments (~ages 10 to 13), in one additional summer assessment prior to the final age-13 biannual assessment, and once again in young adulthood between ages 22 and 26 at an average age of 24 (N=316). At each assessment, a variety of measures assessing the causes, consequences, and correlates of antisocial behavior were administered. Concurrent data are taken from the summer assessment and the regular age-13 assessment following the summer assessment. The Common Language Q-sort (Caspi et al., 1992) which is used to create proxies for FD and SCI was administered only at the summer assessment. At the adult assessment, most of these interviews were conducted at home, but 4% of the sample was interviewed in prison. For the following analyses, between 396 and 425 participants were available for the analyses involving concurrent variables, whereas between 267 and 425 participants were available for the prospective analyses in which age-13 FD and SCI scores are used to predict outcomes at age 24.

Lynam et al. (2007) compared participants who completed the young adult follow-up to those who did not. There were no differences between groups on initial risk status at intake, psychopathy at age 13, or seriousness of delinquent involvement at age 13. Lynam et al. did report that men who participated in the follow-up were more likely to be White.

Measures taken at age-13 (concurrent measures)

Juvenile Psychopathy—Juvenile psychopathy was assessed using parent ratings from the Childhood Psychopathy Scale (CPS; Lynam, 1997) when boys were 13 years old. The CPS was developed to operationalize, in childhood and adolescence, the personality traits found in the PCL-R (Hare, 2003). These traits consisted of 2 to 4 item scales; of the final 12 scales, 8 had alphas greater than .60, and 10 greater than .50. The internal consistency of the total scale was .91. Scores on the CPS predict serious delinquency above and beyond other known predictors (SES, IQ, previous delinquency, and impulsivity), are related to concurrent serious and stable offending, impulsivity, externalizing psychopathology and the Five-Factor Model of personality (Lynam, 1997; Lynam et al., 2005), and to future recidivism and poor treatment outcomes in adolescence (Falkenbach, Poythress, & Heide, 2003). Finally, scores

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

on the mother-rated CPS at age 13 are related to interviewer-rated psychopathy scores 11 years later (Lynam et al., 2007).

Risk status—Initial screening status was used as an index of risk in the current analyses.

Demographics—Four demographic variables were included: race (*White* = 0 vs. *non-White* = 1), family structure (*two parent* = 0 vs. *not* =1), family SES, and census-defined neighborhood context. The SES of the boys' caretakers was assessed with Hollingshead's two-factor index (Hollingshead, 1975). If a boy had both a male and female parent or caretaker, the scores were averaged; if he had only one caretaker, that score was used. The neighborhood SES variable was created by factor analysis of nine variables from the 1990 census data (Lynam et al., 2000). The strongest factor accounted for 58% of the variance and included single-parent households, median income, families below the poverty line, families on public assistance, unemployed adults, and percentage who are African American. Neighborhoods with a factor score in the lowest quartile were classified as high SES, the middle 50% were classified as medium-SES neighborhoods, followed by those and those in the upper quartile classified as low-SES neighborhoods. The low-SES group was split once more, distinguishing low-SES neighborhoods predominated by public housing from low-SES non-public housing areas.

Family variables—Four family variables were included in the analyses: use of physical punishment, inconsistent discipline, lax supervision, and positive parenting. Physical punishment is a single item combining caretaker and child reports on the extent of physical punishment used by the caretaker. Inconsistent discipline combines four caretaker and five child questions on persistence in disciplining. Lax supervision, based on boys' and caretakers' reports (four questions each), reflects parental knowledge of the boys' whereabouts and activities. Low positive parenting is based on the frequency of the parents' positive behaviors toward the boy. Seven items represent the construct in both child-report and caretaker-report scales. Each of these scales showed adequate test-retest reliability in the present sample (Loeber et al., 2000).

Impulsivity—Behavioral and cognitive impulsivity were each taken from a multimethod, multisource battery (see White et al., 1994). Behavioral impulsivity variables include parent-reported under control, observer-reported motor restlessness, teacher reported impulsivity, self-reported impulsivity, and observer-rated impatience-impersistence. Cognitive impulsivity variables include Trial Making Test time, Stroop errors, time perception, circle tracing, and delay of gratification.

Verbal IQ—Verbal IQ was individually assessed via a short form of the Wechsler Intelligence Scale for Children—Revised (Wechsler, 1974). In this version, all 12 subtests were administered, but individual subtests were shortened by administering every other item.

Big Five Personality Traits—The Big Five (neuroticism, extraversion, agreeableness, openness, and conscientiousness) were assessed with items previously identified by John et al. (1996) who constructed Big Five scales using items from the Common Language Q-sort

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

(Caspi et al., 1992). Ratings were provided by the participants' mothers or primary caregivers. Each item is scored from 1 (extremely uncharacteristic) to 9 (extremely characteristic). The present study used 48 items from the Q-sort that previous research has used to operationalize the Big Five domains (Lynam et al., 2005). The internal consistency of the domains ranged from 0.53 for Openness to 0.83 for Agreeableness with a mean of 0.72.

Delinquency—Boys completed the Self-Report Delinquency Instrument used in the National Youth Survey (Elliott, Huizinga, & Ageton, 1985), which inquires about a broad range of delinquency during the previous 6 months. Self-report delinquency data were supplemented with teacher and caretaker reports of delinquent behavior. Because simple frequency counts of delinquent behavior neglect the relative seriousness of the behaviors and can fail to order persons adequately along a dimension of delinquency, we used the seriousness classification scheme developed by Loeber, Farrington, Stouthamer-Loeber, and Van Kammen (1998) which places a boy in one of six delinquency levels ranging from 0 (i.e., no delinquent activity) to 5 (i.e., multiple serious delinquent acts).

Peer delinquency—Peer delinquency was measured as the proportion of friends reported by each participant who engaged in each of 11 different forms of delinquency.

Measures taken at age-24 (prospective measures)

Adult psychopathy—Psychopathy in adulthood was assessed with the PCL:SV (Hart et al., 1995), which consists of 12 items derived from the 20-item PCL–R; items were rated by trained interviewers following a semi-structured interview. The four-facet structure suggested by Hare (2003) was used; the 12 items together provide an overall index of psychopathy, while 3-item subsets assess arrogant, deceitful interpersonal style (Facet 1: Interpersonal); deficient affective experience (Facet 2: Affective); impulsive and irresponsible behavioral style (Facet 3: Impulsive); and antisocial behavior (Facet 4: Antisocial Behavior). To check the reliability of the ratings, 4% of the interviews were rescored by the main investigator. The interrater reliabilities calculated as intraclass correlations based on a single rater and absolute agreement were .86, .59, .71, .84, and .65 for the total scale and Interpersonal, Affective, Lifestyle, and Antisocial Behavior Facet scales, respectively. Coefficient alphas for the scores on these scales were .89, .72, .83, .91, and .77, respectively. Administration and scoring details for the PCL:SV are described elsewhere (e.g., Lynam et al., 2007).

Antisocial personality disorder (APD)—Symptoms of APD were assessed using questions from the Personality Disorder Interview-IV (Widiger, Mangine, Corbitt, Ellis, & Thomas, 1995) a semi-structured interview for the personality disorders. Each of the 7 adult APD criteria was assessed with 4 to 8 yes/no questions; symptoms of conduct disorder before the age of 15 were assessed using 15 items. Interviewers received training from the second author in a manner similar to the training provided for the PCL-SV. For each APD symptom, responses to relevant yes/no questions were summed to form a scale; coefficient alphas ranged between .84 for the 4-item remorse scale to .97 for failure to conform to social norms. Individuals who scored in the top 20% of a symptom scale were considered positive

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

for that symptom. The seven adult symptoms were summed, resulting in a mean of 1.41 (*SD*= 1.63). Requiring the presence of three or more adult symptoms and previous conduct disorder resulted in 14% of the sample receiving diagnoses of APD.

Arrests and convictions—Court records documenting convictions and arrests through age 27 were also obtained. From these records, we calculated the total number of different acts for which a participant had been arrested and convicted.

Life outcomes in early adulthood—When the participants were young adults, interviewers conducted a life history interview, asking a series of structured questions on their living situation, partners and marriages, education, work, and arrests since age 16. Five life outcome variables were included in the analyses: number of children sired, number of years education, and proportion of time since 18 years of age spent unemployed, incarcerated, and in school.

Substance use—Substance use was assessed by self-report using the Substance Use Questionnaire (Loeber et al., 2001). This instrument asks about participants' use of cigarettes, alcohol, marijuana, and other hard drugs without a prescription (e.g., heroin, cocaine, tranquilizers, pain killers, methamphetamine, etc.), as well as problems associated with the use of alcohol, marijuana, and other drugs. For the present analyses, we examined the number of packs of cigarettes smoked per day and whether participants experienced at least one of 10 problems related to their use of alcohol or other drugs (i.e., trouble with friends, family, the police, or other people in the community; gotten into accidents or fights; had problems at school or work; had physical or mental problems).

Personality traits—Basic personality in adulthood was assessed using an abbreviated version of the 240-item NEO PI-R (Costa & McCrae, 1992), which measures 5 major personality domains and 30 specific facets. This version is composed of 120 self-report items. Research using item response theory (IRT) suggests that the full NEO PI-R can be reduced in half with little loss in precision (Reise & Henson, 2000). In the current sample, reliabilities for the five domains ranged from .74 for Openness to .87 for Conscientiousness.

Depression, anxiety, and somatic complaints—In order to examine divergent validity, scales assessing depression, anxiety, and somatic complaints were taken from the young adult self-report (YASR) form of the Achenbach System of Empirically Based Assessments (ASEBA)--a well-established dimensional measure of problem behavior and psychopathology (Achenbach, 1997).

Developing a Proxy Measure for the PPI-R

The PPI-R was not administered to the participants of the PYS, so a proxy measure of the PPI-R was developed using the 100 items of the Common Language Q-set (CLQ; Caspi et al., 1992) which was completed by caregivers at the age-13 summer assessment; this was the only assessment at which this measure was administered. The CLQ comprises 100 items describing a wide range of behaviors; the items represent modifications of the original California Q-Set (Block and Block, 1980) to allow use by lay raters. To develop the proxy

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

PPI-R measure to be used in the youth sample, a separate sample of undergraduate students from a large southeastern university was recruited (UG_1: *N*=198) and administered both the PPI-R and the CLQ. The 100 CLQ items were correlated with each of the eight subscales of the PPI-R to empirically identify CLQ items in the adult sample that could be used to represent the PPI-R scales. The 10 CLQ items with the highest correlations for each PPI-R scale were identified in the adult sample and then refined in the PYS. The scales were refined in the youth sample based on their contribution to the reliability of the specific PPI-R scale, with items that decreased reliability being eliminated until the scale evinced good reliability and had an adequate number of items (i.e. between 3 and 7). Furthermore, overlapping items (i.e. CLQ items that correlated highly with multiple PPI-R scales) were assigned to a single scale based upon the item's face validity. The finalized scales were then examined in a separate sample of undergraduates (UG_2: *N*=239) to assess the convergent reliabilities of the scales.

Planned Analyses

Using our proxy measure of the PPI-R, we examined the zero-order relations of the FD and SCI factors with both concurrent and prospective outcomes (42 in total; see Tables 2 and 3 for complete list). We also tested whether the zero-order relations of the FD and SCI factors with the respective outcome variable were significantly different from one another using Steiger's (1980) test of dependent correlations. Multiple regression was used to test Lykken's hypothesis about the interaction of parenting variables and FD traits. We extended this exploration to include other potential moderators of adolescent FD traits (i.e. IQ, impulsivity, SES, etc.) which lead to 18 moderators being examined. All moderators were centered for the analyses. For the moderation analyses, adult psychopathy was regressed onto the centered moderator, the centered FD factor, and a product term carrying the interaction; these analyses were conducted for the PCL: SV Total score as well as for the four facet scores. In order to test whether FD predicts psychopathy and psychopathy-related outcomes at high levels of SCI (i.e. whether SCI moderates the effects of FD), we conducted multiple regression analyses for all concurrent and prospective outcome variables. In these analyses, the outcome variables were regressed onto centered FD and SCI factors and a product term carrying the interaction. Lastly, we tested the possibility that FD's relation to psychopathy and its nomological network may not be linear, but rather curvilinear; that is, FD may have a weak or nonexistent relationship with relevant outcomes at low and average levels of FD but the relationship may become positive at higher levels of FD. We used hierarchical polynomial regression to probe for a curvilinear relationship. All 42 outcomes variables were regressed onto the centered FD and SCI factors at Step 1, squared FD at Step 2, a product term carrying the interaction of FD and SCI at Step 3, and a product term carrying the SCI and FD-squared interaction at the final step. A significant change in the R^2 value at Step 2 would indicate a significant nonlinear relation for FD, whereas a significant change in R^2 at Step 4 would indicate a significant nonlinear interaction with SCI. Despite the large number of analyses conducted, we maintained alpha at .05 in order to provide the greatest opportunity to observe effects of FD and interactions involving FD on the various outcome measures.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Results

Reliability and Validity of the Proxy PPI-R

The alpha levels of the subscales of the PPI-R proxy measure are displayed in Table 1. Cronbach's alpha was calculated for each subscale; all subscales had moderate to good internal consistency. Importantly, the FD and SCI scales were internally consistent with reliabilities of .70 for FD and .86 for SCI. Mean inter-item correlations for the two broad scales were .14 and .30 for FD and SCI respectively. The FD and SCI proxies were significantly, negatively correlated in the PYS, $r = -.25$, $p < .001$. In addition to the alpha coefficients, Table 1 also displays the convergent correlations of each of the subscales. The UG_1 column displays the coefficient for the convergent correlation between the finalized proxy PPI-R scales made up of CLQ items and actual PPI-R scales in the original adult undergraduate sample in which the proxy measure was initially developed. The UG_2 column presents the convergent correlations between the proxy scales and PPI-R scales in an additional, independent undergraduate sample that had completed the PPI-R. Overall, the convergent correlation coefficients ranged from moderate to high, with only one subscale (Blame Externalization) demonstrating a small correlation between the proxy scale and the PPI-R scale in the second undergraduate sample ($r = .22$). Composites for FD ($UG_1 = .70$, $UG_2 = .77$) and SCI ($UG_1 = .77$, $UG_2 = .67$) both demonstrated good convergence when the proxy scales were compared to the actual PPI-R scales.

In order to examine the factor structure of the final items, we conducted exploratory factor analyses (EFA) using principal axis factoring with an oblimin rotation. We chose to use EFA approach rather than a confirmatory one because personality trait inventories typically fit poorly when their structure is evaluated using confirmatory approaches, likely due to the large number of relatively small, meaningful, and typically unspecified cross loadings that exist on such inventories. This is likely to be truer in the present case given the presence of sub-factors within each of the higher-order ones (see Hopwood & Donnellan, 2010 for a detailed discussion surrounding these issues). Although there were six eigen values greater than 1.0 (5.885., 3.084, 1.821, 1.505, 1.302, 1.187), the Minimum Average Partial (MAP) method of Velicer (1976) indicated the presence of a two factor structure. Results from Horn's Parallel Analysis (PA; 1965), using 95th percentile of random eigenvalues as the criterion, suggested that up to 5 factors could be extracted. We examined the results of EFAs extracting between two and five factors for interpretability and found that the two-factor solution was preferred. The five factor solution revealed factors clearly identifiable as blends of rebellious nonconformity and Machiavellian egocentricity (both SCI scales), carefree nonplanfulness and blame externalization (both SCI scales), social influence and stress immunity (both FD scales), and a separate fearlessness factor. A fifth factor contained two items from the social influence scale. In the four factor solution, the four SCI scales formed a single factor with the other factors preserved. In the three factor solution, the additional social influence items loaded on the Social Influence/Stress Immunity factor while fearlessness and SCI remained their own factors. In the two factor solution, fearlessness came together with the social influence/stress immunity factor to form the FD factor. This final two factor structure mapped onto the *a priori* structure very well. All FD items had their highest factor loadings on the same factor as did the SCI items; the factor scores from the

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

two-factor solution were very highly correlated with their *a priori* counterparts, convergent *r*s = .97 and .93 for SCI and FD respectively. Divergent correlations were also good, *r*s = -.35 for the FD factor with the *a priori* SCI scale and -.11 for the SCI factor with the *a priori* FD scale.

Finally, we examined the possibility that items within the two scales functioned differentially in their relations to outcomes, such that individual items could be driving our results as opposed to the scales. We did this by examining the correlations between each individual item and the 42 concurrent and prospective outcomes examined in the present paper. In general, no items functioned remarkably better than any others. Average correlations (absolute value) for FD items ranged from .05 to .17 and .04 to .08 with means of .11 and .06 and medians of .10 and .06 for the concurrent and prospective variables, respectively. The correlations for SCI items ranged from .12 to .24 and .06 to .14 with means of .19 and .10 and medians of .20 and .12 for the concurrent and prospective variables, respectively. Thus, it is unlikely that the results reported below are due to the performance of specific, singular items.

Zero-order Relations

The zero-order correlations for FD and SCI with the criterion measures are displayed in Tables 2 and 3. SCI was strongly positively related to scores on the CPS, whereas FD was significantly negatively related, indicating that the traits captured by SCI are similar to those that characterize juvenile psychopathy.[2] Consistent with these findings, SCI was significantly positively related to risk status, whereas FD was not. In terms of other concurrently measured variables, SCI was correlated with most of the other risk factors for antisocial outcomes (i.e., poor parenting, single parent family, low IQ, high impulsivity, high peer delinquency, and high self-reported delinquency); the only exception was SES to which it was unrelated. In contrast, FD was uncorrelated with all but two concurrent risk factors. The two exceptions were low positive parenting and SES for which FD was related in the direction opposite to risk; that is, FD was associated with higher SES and higher levels of positive parenting. Patterns of correlations were also quite divergent for SCI and FD in relation to the FFM, although each pattern is generally consistent with what is found in studies of adults with the exception that the FD proxy was more positively related to Agreeableness and Conscientiousness than is usually the case. SCI was strongly negatively correlated with Agreeableness and Conscientiousness and moderately correlated with Neuroticism (positively) and Openness (negatively). In contrast, FD was strongly correlated with Neuroticism (negatively) and Extraversion (positively), and moderately positively correlated with Openness, Agreeableness, and Conscientiousness. Of the 19 pairs of correlation reported in Table 2, 17 were statistically significantly different from each other.

In terms of adult outcomes, SCI was positively correlated with all antisocial outcomes including the total score of all facets of psychopathy, APD, and variety of arrests and convictions. FD was uncorrelated with all of these outcomes. SCI was also significantly related to other negative outcomes including fewer years of education, more time spent

[2]It should be noted that the relations of FD and SCI with the CPS and concurrent measures of the Big Five are contaminated by predictor criterion overlap due to the fact that the CPS and Little Five were also created using items from the CLQ.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

unemployed, having sired a child before age 18, having been incarcerated before age 18, cigarette use, and drug-related problems. FD was unrelated to all of these outcomes; the only negative outcome to which FD was related was alcohol-related problems. Correlations for the FFM were similar but smaller in magnitude to those observed concurrently. SCI was significantly negatively correlated with Agreeableness and Conscientiousness, and significantly positively correlated with Neuroticism. The only significant correlation for FD was a positive one with Extraversion. Neither SCI nor FD were significantly correlated with depression, anxiety, or somatic complaints, although correlations tended to run in opposite directions. Fifteen of the 23 correlations reported in Table 3 were significantly different for SCI and FD.

FD x Other Variable Moderation Analyses

To test whether FD's prediction of adult psychopathy was moderated by other concurrent influences, such as parenting or IQ, regression analyses were conducted using the concurrent variables seen in Table 2 (19 total) to predict adult psychopathy scores—the total score and each of the four facets. The results of the analyses did not show any significant interactions between the FD factor and any of the four parenting variables, contrary to Lykken's (1995) prediction. Of the 95 possible interactions (i.e., 19 moderators by 5 outcomes), only five were statistically significant. Peer delinquency interacted with FD to predict PCL: SV Total scores, and scores on the Affective and Antisocial Behavior facets. All interactions were of the same form such that FD was negatively related to later psychopathy at lower levels of peer delinquency and positively related at higher levels; when simple slopes were examined at one standard deviation above and below the mean, the simple slopes for FD were significantly different from zero only for the Antisocial Behavior facet at a high level of peer delinquency (B = 0.16, $p < .05$). The fourth and fifth interactions involved initial risk status and the PCL: SV Impulsive and Antisocial facets. For the Impulsive facet, FD was not significantly related at either low or high levels of risk, but FD was significantly negatively related to the Antisocial facet among those who were identified as high risk.

FD x SCI Interaction Analyses

To investigate whether FD and SCI interacted to predict the outcome criteria, separate regression analyses were conducted for each index seen in Tables 2 and 3. Thus, a total of 42 separate regression analyses were conducted. Of the 42 analyses conducted, there were only two significant interactions between FD and SCI; these were for Agreeableness (B=.068, $p < .05$) and Anxiety (B = .39, $p < .05$) measured in adulthood. Probing the interaction for Agreeableness at one standard deviation below and above the mean of SCI revealed that FD was significantly negatively related to Agreeableness at low levels of SCI (B = -.14, $p < .05$) but not at high levels of SCI (B = .01, ns). For Anxiety, FD was significantly negatively related at low levels of SCI (B = -.81, $p < .05$) but not at high levels (B = .08, ns).

Polynomial Regression Analyses

Polynomial regression was also used to test for non-linear relationships between FD and the 42 outcome variables. Of the 42 analyses, the polynomial term was significant at Step 2 for concurrently measured Openness and for time spent unemployed. For Openness, the relation was such that FD was positively related to Openness at lower levels of FD but not at higher

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

levels. For unemployment, FD was positively related to unemployment from low to average levels, but negatively related from average to high levels of FD. Of the 42 analyses, there were three instances in which the SCI by curvilinear FD interactions were significant—concurrent and prospective Neuroticism and parental discipline. None of these curvilinear interactions were of the same form; only the interaction for harsh parental discipline appeared to be consistent with the hypothesis. This interaction was such that at high levels of SCI, FD was positively curvilinearly related to harsh discipline, whereas at low levels of SCI, FD was negatively curvilinearly related.

Discussion

The primary aim of this study was to examine the relations among fearless dominance-related traits, self-centered impulsivity-related traits, and a variety of risk and outcome measures in a longitudinal sample. More specifically, we were interested in identifying under what conditions FD-related traits are associated with negative outcomes, either concurrently or prospectively. We examined four specific possibilities that have been highlighted in the literature (e.g., Bloningen, 2013; Lilienfeld et al., 2012) as possible explanations for the mostly null findings found in the adult literature (Miller & Lynam, 2012). First, we examined the possibility that high levels of FD-related traits in early adolescence might constitute a temperamental risk factor, whereas high levels of FD-related traits in adulthood might constitute a marker of successful adjustment. Second, we tested the possibility that FD-related traits might interact with other childhood variables, most notably parenting variables, to predict psychopathy in adulthood. Third, we examined whether FD-related traits interacted with SCI-related traits to predict risk. Finally, we explored the possibility that FD-related traits might be non-linearly related to concurrent or prospective outcomes. To examine these possibilities, we created proxy measures of FD and SCI and identified a number of psychopathy-related variables within the middle sample of the Pittsburgh Youth Study—a high-risk sample of boys followed from ages 10 to 13 and again in young adulthood at an average age of 24. Whereas SCI showed robust relations to risk factors and negative outcomes, there was little evidence that FD was related to negative outcomes under any conditions.

The zero-order relations of FD and SCI to variables measured in adolescence and adulthood did not provide support for the idea that earlier assessed FD is a more potent risk factor than later assessed FD. The relations observed here using FD and SCI assessed in early adolescence were similar to those observed when FD and SCI are observed in adulthood (see Miller & Lynam, 2012). SCI was robustly related to concurrent risk factors (e.g., childhood psychopathy, risk status, poor parenting, low IQ, and impulsivity) and future negative outcomes (e.g., adult psychopathy, antisocial personality disorder, official reports of offending, and a variety of negative life outcomes). The findings for future outcomes is quite impressive in that a scale composed of 14 mother-rated personality items is capable of predicting, 11 years later, a variety of antisocial outcomes collected from interviews, official records, and self-reports. Similar findings on later psychopathy have been presented from this sample previously using both theoretically- and empirically-derived scales constructed from the mother-reported CLQ (Lynam, Derefinko, Caspi, Loeber, & Stouthamer-Loeber, 2007), but the present study extends these findings to official criminal reports, interviewer

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

ratings of antisocial personality disorder, and self-reports of incarceration, education, unemployment, and substance use. Although the effect sizes are not large, the presence of such effects is noteworthy given that the CLQ is meant to assess normal-range and not disordered personality, that there is no overlap in sources from age 13 to age 24, and that average span of prediction is 11 years. These results are a testament to the importance of early personality to later antisocial outcomes.

In contrast, FD, when it was related to any outcomes, was related to positive functioning (e.g., the absence of risk factors and negative outcomes, higher SES, and more positive parenting). FD was only significantly related to one index of maladaptive functioning in adulthood (alcohol use problems; r =.12). Relations to personality also mostly replicated previous findings and underscored the divergent natures of FD and SCI. SCI was strongly negatively related to concurrent measures of Agreeableness and Conscientiousness, and moderately positively related to concurrent Neuroticism; these relations were mostly replicated with young adult measures. This pattern of findings, especially the very low levels of Agreeableness and Conscientiousness are in line with much work in adults on the broader psychopathy construct (Lynam & Miller, in press). In contrast, in terms of concurrent measures, FD was strongly negatively related to Neuroticism, strongly positively related Extraversion, and weakly to moderately positively correlated with Conscientiousness, Agreeableness and Openness. For the prospective measure of personality, FD was only significantly positively related to Extraversion. Consistent with previous work, SCI appears to be an excellent marker of the broader psychopathy construct (e.g., Gaughan, Miller, Pryor, & Lynam, 2009; O'Boyle, Forsyth, Banks, Story, & White, in press).

Tests of potential moderators, other than SCI, on FD's relations to the criteria revealed few significant interactions. Lykken's (1995) developmental theory suggests that the fearless child should develop into the psychopathic adult when raised by parents with average to below average parenting skills. In the present study, contrary to Lykken's hypothesis, the relation between FD-related traits in childhood and psychopathy in adulthood was not moderated by quality of parenting. Regardless of the parents' use of harsh discipline, consistency in discipline, supervision, or levels of positive parenting, FD did not predict adult psychopathy at the total score or facet score levels. This finding is also in line with other recent tests of this hypothesis using the PPI-R in an adult sample (Miller, Maples-Keller, & Lynam, in press). We also examined the possibility that FD might interact with other risk factors in early adolescence to produce adult psychopathy. Across these additional 75 interactions, only five were statistically significant—despite keeping our alpha level at 0.05. Three involved peer delinquency, whereas the fourth and fifth involved initial risk status; only the one involving peer delinquency in the prediction of PCL:SV Antisocial Behavior appeared consistent with theory. In general, FD did not interact with other variables to predict adult psychopathy.

Tests of interactions between SCI and FD also revealed very few significant effects. Of 42 tests, only two were statistically significant. These occurred for Agreeableness and Anxiety measured in adulthood; the nature of these interactions was not in line with expectations. Thus, there was no evidence that FD is more pathological in the presence of high levels of SCI. This runs counter to hypotheses put forward by proponents of FD-related traits who

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

have suggested that these traits in the presence of high levels of SCI-related traits might be more strongly related to traditional psychopathy-related outcomes (e.g., antisocial behavior, aggression) than it is at low levels of SCI (e.g., Lilienfeld et al., 2012; Marcus et al., 2013). The absence of FD x SCI interactions also argues against the approach adopted for antisocial personality disorder (APD) in Section III of DSM-5 in which FD-related traits serve as diagnostic specifiers. To the extent that our proxy of SCI maps onto the traits characterizing APD DSM-5, there is little predictive benefit to be gained from also including FD-related traits—a finding consistent with work done in adulthood (Few, Lynam, Maples, MacKillop, & Miller, 2015; Maples et al., 2014).

Finally, we examined the possibility put forward by Blonigen (2013) that curvilinear effects for FD-related traits "are certainly plausible and may work in concert with the moderational processes … in the prediction of maladaptive outcomes" (p. 88). This possibility was also not realized. Of 84 possible interactions (i.e., 42 involving the squared FD term and 42 involving the interaction between squared FD and SCI), only five were statistically significant and only one of these was somewhat in line with hypotheses. Given the high family-wise Type I error rate that is present given our use of a .05 criterion for statistical significance, we believe that this finding should be viewed with significant caution.

The Future of FD-related Traits

The present results add to the accumulating absence of evidence for the incremental utility of FD-related traits to negative outcomes traditionally associated with psychopathy. Previous research has shown that these traits are generally unrelated to delinquency, aggression, externalizing problems, antisocial personality disorder, impulsivity, and institutional misconduct (Edens, Poythress, Lilienfeld, Patrick, & Test, 2008; Miller & Lynam, 2012; Smith, Edens, & Vaughn, 2011)—traditional psychopathy-related outcomes. The present results replicate some of these findings (e.g., impulsivity, delinquency, future APD symptoms) and add others to the list of noncorrelates—future psychopathy, arrests and convictions, incarceration, low educational achievement, and unemployment. Importantly, SCI-related traits predicted all of these outcomes. At this point, FD-related traits appear most strongly related to the absence of psychopathology and other measures of FD-related traits (e.g., Anderson, Sellbom, Wygant, Salekin, & Krueger, 2014; Few, Lynam, Maples, MacKillop, & Miller, 2015; Miller & Lynam, 2012). When traits primarily predict alternative measures of themselves, it may be time to rethink their centrality to the construct. It is possible that other studies using different samples and different outcome measures might find evidence for the predictive utility of FD-related traits in relation to some, alternative specific outcome. Such findings will have to contend, however, with a now substantial literature documenting null to limited relations between FD traits and important outcomes in incarcerated, community, undergraduate, and now high-risk adolescent samples. Perhaps psychopathic individuals who are high in FD-related traits are particularly good at conning others (e.g., significant others, bosses, parole boards) or prolonging parasitic relationships by hiding or mitigating the presence of the more obviously deleterious traits related to antagonism and disinhibition but these questions await future study.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Alternatively, perhaps it is time to re-evaluate the role of FD-related traits in psychopathy. More specifically, we believe it is time to drop them as essential aspects of the construct. Although FD-related traits have been consistently included in the lexicon of modern psychopathy, we believe that future writings on psychopathy should be purposeful in avoiding linking FD-related traits to psychopathy when discussing the construct. The continued inclusion of FD-related traits in writings on psychopathy are likely to contribute to misunderstanding over which traits are important to the psychopathy and which traits are not. Lynam and Miller (in press; Miller & Lynam, 2015; Miller, Lamkin, Maples-Keller, & Lynam, in press) have written that antagonism seems to be both a necessary and near sufficient condition for psychopathy, and, when paired with disinhibition, is more than sufficient for psychopathy. At this point, proponents for FD-related traits may argue that this conception, psychopathy as a configuration of traits from antagonism and disinhibition, fails to capture Cleckley's original description. To some degree this is true. But it is not entirely clear that FD-related traits are perfectly consistent with Cleckley's original description either. Cleckley wrote that psychopathic individuals are "free, or as free as the general run of humanity, from real symptoms of psychoneurosis" (Cleckley, 1941/1988, p. 259). Individuals high on FD-related traits do not fall in the average range on these traits but instead fall well below average. That is, individuals high in FD-related traits are not just as emotionally resilient or stable as the average person, they are hyper-resilient and extraordinarily emotionally stable.[3]

More importantly, even if Cleckley did include FD-related traits why must the field remain yoked to Cleckely's original description? Psychological constructs, including psychopathy, should be open for ongoing evaluation and refinement over time (Crego & Widiger, in press; Hare & Neumann, 2008). Cleckley was a an excellent clinician and writer, but his conception of psychopathy was based on a series of case studies, collected non-systematically over decades, from a single psychiatric institution. The field of schizophrenia does not hew tightly to Kraepelin's original definition of *dementia praecox* as they debate refinements in the conceptualization of the disorder. Kraepelin's observations served as excellent starting points, but the field has moved beyond them as more systematic research has been conducted. The more systematic research in psychopathy suggests that FD-related traits are not essential to the psychopathy construct. Hare first noted this while developing his Psychopathy Checklist (Hare, 2003; Hare & Neumann, 2008). He began with Cleckley's original criteria, including deficient anxiety, but found that deficient anxiety "did not emerge as a consistent discriminating feature of psychopathy in forensic populations" and did not correlate with other psychopathy symptoms (Hare, 2003, p. 12). So he modified the PCL criteria to be in line with the empirical research. We believe it may be time that broader field does the same with the general psychopathy construct. This is undoubtedly an unpopular position among many psychopathy researchers who remain committed to the idea that FD-related traits play an important role in psychopathy. We believe that psychopathy research in general and this debate more specifically will be advanced more quickly and meaningfully if proponents of the inclusion of these traits explicitly specify the psychopathy-relevant

[3]We believe a similar issues arises when proponents of the inclusion of FD-related traits attempt to align FD-related traits with Karpman's (1941) conception of primary psychopathy. Our interpretation of primary psychopathy is the presence of serious and chronic antisocial behavior in the absence of overt psychopathology not an invulnerability to psychopathology.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

outcomes that they should predict and why these outcomes are relevant. For instance, while these traits are related to presidential performance (Lilienfeld, Waldman et al., 2012) and heroism (Smith, Lilienfeld, Coffey, & Dabbs, 2013) in interesting ways, these are most certainly not the kinds of outcomes one typically associates with a severe personality disorder like psychopathy.

We don't dispute that Cleckley saw these traits in his cases, but we believe this was due to factors other than their centrality to psychopathy. When these traits appear in conjunction with long histories of antisocial behavior, low levels of agreeableness, and deficient impulse control, they stand out and draw the eye. This is especially likely when this person is placed next to individuals with psychosis, bipolar disorder, and major depression—the sorts of patients who surrounded Cleckley in the institution. These traits may have also been important to getting into the institution. Many of the case studies Cleckley described came from the penal system, often hand-delivered by police. We suspect that FD-related traits were related to decisions made by the police and judges in the 1930s through 1950s about who should go to prison and who should go to the psychiatric institute. We believe the latter explanation helps make sense of two other characteristics seen in all or many of the case studies—skin color and socioeconomic status. All of Cleckley's cases were white and most, certainly the younger individuals profiled by Cleckley, came from families with wealth and/or high reputation. Although we don't believe that being high in FD-related traits, white, and from a high SES background are essential features of psychopathy, we do believe these may have been important to determining who was placed in prison and who was placed in the psychiatric institution.

There may be one additional approach to salvaging some FD-related traits, but it requires a reformulation—emphasizing some aspects, eliminating others, and adding some additional ones. The one negative outcome to which FD-related traits are linked is grandiose narcissism (e.g., Miller & Lynam, 2012; Miller, Maples-Keller, & Lynam, in press). But this association is due primarily to the presence of high extraversion, and to some degree lower neuroticism, that is shared by both constructs. The aspect of grandiose narcissism that is most pathological and consequential (e.g., related to negative outcomes), however, is the low Agreeableness aspect, particularly elements assessing arrogance and entitlement--the parts missing from FD. If the umbrella that covers FD-related traits was broadened to capture other core aspects of narcissism such as grandiosity, hostility, dishonesty, and entitlement (e.g., O'Boyle et al., in press; Miller et al., 2014), the reformulated construct would be more strongly related to the sorts of negative outcomes traditionally associated with psychopathy and thus be more relevant to the construct. This would also require reducing the emphasis on extraordinarily low scores on self-directed negative affective states such as anxiety. Essentially, FD-related traits would become grandiose-narcissism-related-trait and researchers could ask whether these traits provides additional utility. There is a factor from the Elemental Psychopathy Assessment (Lynam et al., 2011) that includes elevations on anger, self-assurance, dominance, and arrogance that is fairly close to grandiose narcissism (Few, Miller, & Lynam, 2013). One benefit of such a change is that much is known about grandiose narcissism (see Miller & Campbell, 2010 for a review) including its effects on initial impressions and how those impressions change over time (e.g., Paulhus, 1998), the mechanisms by which it relates to aggression following ego threat (e.g., Bushman &

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Baumeister, 1998) and even without threat (Maples et al., 2010), as well as decision making biases (e.g., Campbell, Goodie, & Foster, 2004).

Broader Implications for Antisocial Behavior

There are several implications from the present results for the study of antisocial behavior more broadly. First, these results underscore the utility of juvenile psychopathy as a means of parsing the heterogeneity of antisocial behavior in adolescence. Previous work by Frick and colleagues (e.g., Frick, Stickle, Dandreaux, Farrell, & Kimonis, 2005; Pardini, Stepp, Hipwell, Stouthamer-Loeber, & Loeber, 2012) has shown that Callous Unemotional traits, a subset of traits from the larger psychopathy construct, predict greater aggression and more stable conduct problems among youth with high levels of antisocial behavior. Previous results from the Pittsburgh Youth Study using the Childhood Psychopathy Scale (Lynam, 1997) have shown that the construct is relatively stable across adolescence (Lynam et al., 2009) and into adulthood (Lynam et al., 2007), and that it predicts adult offending beyond a plethora of other risk factors including ADHD and conduct disorder (Lynam, Miller, Vachon, Loeber, & Stouthamer-Loeber, 2009). Current results extend previous ones to additional negative outcomes and suggest that juvenile psychopathy become a target of great study. Understanding its etiology and development is a means of understanding the etiology and development of future antisocial behavior.

Second, these results indicate good consensus about the core features of psychopathy in adolescence. The items used to operationalize SCI in the present study and found to be predictive of adult psychopathy, APD symptoms, and official records of arrests and convictions are quite similar to items used previously in the PYS to operationalize psychopathy. Three different approaches have been previously used to identify personality items that are associated with psychopathy in the PYS. The first approach, the Childhood Psychopathy Scale, selected items to operationalized the constructs present in the Hare Psychopathy Checklist–Revised (PCL-R: Hare, 2003). A second approach asked psychopathy experts to describe, using the Common Language Q-Sort, the prototypic juvenile psychopath. The third approach was empirically based and involved identifying the CLQ items in adolescence that were most predictive of psychopathy in adulthood. Lynam, Derefinko, Caspi, Loeber, & Stouthamer-Loeber (2007) reported very high rates of agreement among the three approaches with gamma coefficient s ranging from .90 to .95. The items used in the present study to operationalize SCI overlap greatly with these other approaches. Of the fourteen items used to operationalize SCI, 12 ppear in at least one other approach, 10 appear in two or more different approaches, and 6 appear in all three of the alternative approaches. The convergence across four different approaches suggests that the profile of juvenile psychopathy is fairly well-characterized; the 6 items that appear in all approaches involve: pushing limits, trying to take advantage of others, manipulating others, needing to be the center of attention, not being planful, and not being trustworthy or dependable. These items are quite consistent with descriptions of adult psychopathy and might be considered to constitute the core of juvenile psychopathy. Importantly and interestingly, they do not include assessments of explicitly antisocial behavior.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Finally, and perhaps most interestingly, the present results underscore the importance of specific personality traits for understanding psychopathy and antisocial behavior. Much work at the adult level has shown that psychopathy can be understood as a configuration of traits from a general model of personality, namely the Five Factor Model (FFM) of personality (see Lynam & Miller, in press; Miller & Lynam, 2015). This research has shown that the main personality component of psychopathy is low Agreeableness (or high antagonism) with additional features representing low Conscientiousness. These traits are central to psychopathy according to expert ratings, empirical relations, and translations of psychopathy inventories—including the PPI (Derefinko & Lynam, 2006). Moreover, recent work suggests that low Agreeableness saturates extant psychopathy inventories and helps explain their higher-order structure (Lynam & Miller, in press; Sherman, Lynam, & Heyde, 2014). Assary, Salekin, and Barker (2015) recently examined the relations between the FFM and CU traits in pre-school children; these authors found that Agreeableness was negatively correlated with CU traits almost as highly as the reliabilities of the scales allow. Current results also support the importance of these two traits in adolescence as risk factors for psychopathy and antisocial behavior in adulthood. Of the fourteen CLQ items used to operationalize SCI, twelve are indicators of agreeableness, conscientiousness, or both. Additionally, Agreeableness and Conscientiousness are also the strongest personality correlates of antisocial personality disorder (Decuyper, De Pauw, De Fruyt, De Bolle, & De Clerq, 2009), antisocial behavior, and aggression (Jones, Miller, & Lynam, 2011; Miller & Lynam, 2001).

Limitations

There are a few limitations to the present study. Whenever one wishes to accept null findings, as in our failure to find interactions involving FD, statistical power is always a concern. Power appeared quite adequate for analyses involving concurrent variables as outcomes for which 412 participants were available on average. Assuming that the main effects accounted for 12% of the variance in the outcome (a conservative estimate for the present analyses), power was .60, .88, and .97 to detect increments of 1%, 2%, and 3% in the variance accounted for respectively. Power was somewhat lower but still adequate at larger effect sizes for the analyses involving data collected in young adulthood. For these analyses, an average of 270 participants were available; under the previous parameters, power was .42, .70, and .88 to detect increments in variance accounted for of 1%, 2%, and 3%, respectively. A second limitation involves our use proxy measures for Fearless Dominance and Self-centered Impulsivity. The PPI/PPI-R was not administered to the sample when they were between 10 and 13 years old, thus we created proxies using extant items—an always fraught undertaking. However, we believe our proxies are adequate for the task at hand. They were created and validated on two independent samples of undergraduates. Their convergent correlations (i.e., .70 and .77 for FD and .77 and .67 for SCI across the two samples) are as good as those observed in the study by Benning et al. (2003) in which proxies for the PPI were created using subscales of the MPQ which have, in turn, been used in multiple studies as indicators of FD and SCI. The convergent correlations for Benning et al. were computed on the same sample from which the proxies were derived and were only .70 for FD and .67 for SCI. Final limitations concern the limits of the PYS. Although it offers an impressive time frame and a variety of risk factors and outcome measures assessed using

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

different sources (i.e., self, parent, and official records), it is restricted to boys from inner-city Pittsburgh, the rate of attrition was high, and FD and SCI were assessed using a single source. To the extent the present results replicate in samples of girls and women and less urban environments using other measures and sources remains to be seen.

Future Directions

Although some researchers have argued that the prototypical psychopathic individual should have high scores on both SCI and FD, there is much disagreement about the centrality of the FD-related components. Miller and Lynam (in press) have offered that traits related to FD are neither necessary nor sufficient for psychopathy, arguing that they "serve to draw the eye when they are found among individuals who are low in agreeableness and conscientiousness, but that there is little extant data at this time suggesting that these traits bear causal relations to the other traits characterizing psychopathy or to the behaviors that make the construct important (e.g., antisocial behavior)" (p. 14). Our results provide no support for the centrality of FD-related traits to psychopathy or to future antisocial behavior. Moving forward, we suggest removing FD-related traits from the conception of psychopathy and focusing more on the more central aspects of psychopathy captured by SCI, namely low Agreeableness and low Conscientiousness.

We believe that a focus on more central and more specific aspects of psychopathy will be the most useful approach to understanding psychopathy and antisocial behavior. Whether this focus should be at the broader domain level of Agreeableness and Conscientiousness or the more specific facet level of straightforwardness (A), compliance (A), dutifulness (C), and deliberation (C) is an empirical question. However, moving to the basic personality level has offers many advantages to the study of antisocial behavior. Specifically, it makes research on Agreeableness and Conscientiousness relevant to understanding antisocial behavior. The processes underlying these domains are the processes underlying antisocial behavior. Robinson and colleagues have done much research exploring the cognitive and affective underpinnings of agreeableness. They have found that individuals low in Agreeableness have a difficult time disengaging from antisocial stimuli (Wilkowski, Robinson, & Meier, 2006) and are more prone to aggression following aggression-related cues (Meier, Robinson, & Wilkinson, 2006), and they have situated Agreeableness in a broader cognitive processing model where it relates to affect and emotion control following the activation of hostile thoughts (Robinson, 2007). Roberts and colleagues have provided in-depth examinations of Conscientiousness—its composition (Roberts, Lejuez, Krueger, Richards, & Hill, 2014); its relations to guilt, health, longevity, and externalizing problems (e.g., Fayard, Roberts, Robins, & Watson, 2012); and its development over time (Shanahan, Hill, Roberts, Eccles, & Friedman, 2014). Based, in part, on this work, they have recently offered a theory-driven approach to changing individuals' levels of Conscientiousness (Magidson, Roberts, Collado-Rodriguez, & Lejuez, 2014). All of this research is relevant to understanding and, potentially, intervening with antisocial behavior.

These personality traits may also help explain the epidemiological facts surrounding antisocial behavior. Personality has already been shown to do so in the case of psychopathy. For example, personality has been shown to account for the comorbidity of psychopathy

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

with other PDs (Lynam & Derefinko, 2006). Similarly, Lynam and Miller (in press), used gender differences in the FFM to explain observed gender differences in psychopathy. Additionally, Vachon et al. (2013) showed that normative age-related changes in FFM traits could accurately predict age-related changes in psychopathy assessed using the PCL-R. Finally, although not directly demonstrated, there is evidence to suggest that the genetics of psychopathy are the genetics of Agreeableness and Conscientiousness. In their genetic analysis of the Youth Psychopathic Traits Inventory, Larsson, Andershed, and Lichtenstein (2006) found that a higher-order genetic factor accounted for much of the phenotypic variation in the three YPI subscales, but that the callous-unemotional and impulsive/irresponsible subscales each had additional unique genetic contributions. These results are paralleled by results from Sherman, Lynam, and Heyde (2014) who probed the YPI using the Five Factor Model. These authors found that agreeableness served suffused all three subscales, but that the CU subscale had additional relations to low E and low N whereas the I/I subscale bore additional relations to low C. We suggest that the overlap of antisocial behavior with other externalizing problems, sex differences in antisocial behavior, changes in antisocial behavior, and the genetics of antisocial might be usefully explored and explained by Agreeableness and Conscientiousness.

Acknowledgments

This research was supported in part by NIMH grants MH45070, MH49414 and MH60104; grant 86-JN-CX-0009 from the Office of Juvenile Justice and Delinquency, U.S. Department of Justice; and the University of Wisconsin Graduate School. We would like to thank Terrie Moffitt and Avshalom Caspi for making data available to us, as well as the boys and their families from the PYS for providing the data.

References

Achenbach, T. Manual for the Young Adult Self-Report and Young Adult Behavior Checklist. Department of Psychiatry, University of Vermont; Burlington, VT: 1997.

American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5. Arlington, VA: American Psychiatric Publishing; 2013.

Anderson JL, Sellbom M, Wygant DB, Salekin RT, Krueger RF. Examining associations between DSM-5 section III antisocial personality disorder traits and psychopathy in community and university samples. Journal of Personality Disorders. 2014; 28

Assary E, Salekin RT, Barker ED. Big-five and callous-unemotional traits in preschoolers. Journal of Psychopathology and Behavioral Assessment. 2015; 37:371–379.

Benning SD, Patrick CJ, Hicks BM, Blonigen DM, Krueger RF. Factor Structure of the Psychopathic Personality Inventory: Validity and Implications for Clinical Assessment. Psychological Assessment. 2003; 15(3):340–350. DOI: 10.1037/1040-3590.15.3.340 [PubMed: 14593834]

Block, J.; Block, JH. The California Child Q-Set. Palo Alto, CA: Consulting Psychologists Press; 1980.

Blonigen DM. Is fearless dominance relevant to the construct of psychopathy? Reconciling the dual roles of theory and clinical utility. Personality Disorders: Theory, Research, and Treatment. 2013; 4(1):87–88. DOI: 10.1037/a0027152

Bushman BJ, Baumeister RF. Threatened egotism, narcissism, self-esteem, and direct and displaced aggression: Does self-love or self-hate lead to violence? Journal of Personality and Social Psychology. 1998; 75:219–229. [PubMed: 9686460]

Campbell W, Goodie AS, Foster JD. Narcissism, confidence, and risk attitude. Journal of Behavioral Decision Making. 2004; 17:297–311.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Caspi A, Block J, Block JH, Kloop B, Lynam D, Moffitt TE, et al. A “common language” version of the California Child Q-set for personality assessment. Psychological Assessment. 1992; 4:512–523.

Cleckley, H. The mask of sanity. St Louis, MO: Mosby; 1941/1988.

Costa, PT., Jr; McCrae, RR. NEO PI-R professional manual. Odessa, FL: Psychological Assessment Resources, Inc; 1992.

Crego C, Widiger TA. Psychopathy and the DSM. Journal of Personality. in press.

Decuyper M, De Pauw S, De Fruyt F, De Bolle M, De Clercq B. A Meta-Analysis on Psychopathy-, Antisocial PD- and FFM Associations. European Journal of Personality. 2009; 23:531–565.

Declercq F, Willemsen J, Audenaert K, Verhaeghe P. Psychopathy and predatory violence in homicide, violent, and sexual offences: Factor and facet relations. Legal and Criminological Psychology. 2012; 17(1):59–74.

Derefinko K, Lynam DR. Convergence and divergence among self-report psychopathy measures: A personality-based approach. Journal of Personality Disorders. 2006; 20:261–280. [PubMed: 16776555]

Edens JF, Poythress NG, Lilienfeld SO, Patrick CJ, Test A. Further evidence of the divergent correlates of the Psychopathic Personality Inventory factors: prediction of institutional misconduct among male prisoners. Psychological Assessment. 2008; 20:86–91. [PubMed: 18315404]

Elliott, DS.; Huizinga, D.; Ageton, SS. Explaining delinquency and drug use. Beverly Hills, CA: Sage Publications; 1985.

Falkenbach DM, Poythress NG, Heide KM. Psychopathic features in a juvenile diversion population: Reliability and predictive validity of two self-report measures. Behavioral Sciences & the Law. 2003; 21:787–805. DOI: 10.1002/bsl.562 [PubMed: 14696031]

Fayard JV, Roberts BW, Robins RW, Watson D. Uncovering the affective core of conscientiousness: The role of self-conscious emotions. Journal of Personality. 2012; 80:1–32. [PubMed: 21241309]

Few L, Lynam DR, Maples J, MacKillop J, Miller JD. Comparing the utility of DSM-5 section II and III antisocial personality disorder diagnostic approaches for capturing psychopathic traits. Personality Disorders: Theory, Research, and Treatment. 2015; 6:64–74.

Frick PJ. Juvenile psychopathy from a developmental perspective: Implications for construct development and use in forensic assessments. Law and Human Behavior. 2002; doi: 10.1023/A:1014600311758

Frick PJ. Extending the construct of psychopathy to youth: Implications for understanding, diagnosing, and treating antisocial children and adolescents. Canadian Journal of Psychiatry. 2009; 12:803–812. [PubMed: 20047719]

Frick PJ, Stickle TR, Dandreaux DM, Farrell JM, Kimonis ER. Callous-unemotional traits in predicting the severity and stability of conduct problems and delinquency. Journal of Abnormal Child Psychology. 2005; 33:471–487. [PubMed: 16118993]

Gaughan ET, Miller JD, Pryor LR, Lynam DR. Comparing two alternative measures of general personality in the assessment of psychopathy: A test of the NEO PI-R and the MPQ. Journal of Personality. 2009; 77:965–996. [PubMed: 19558446]

Hare, RD. The Hare Psychopathy Checklist-Revised. 2. Toronto: Multi-Health Systems; 2003.

Hare RD, Neumann CS. Psychopathy as a clinical and empirical construct. Annual Review of Clinical Psychology. 2008; 4:217–246.

Hart, SD.; Cox, DN.; Hare, RD. Manual for the Psychopathy Checklist: Screening Version (PCL:SV). Toronto, Canada: Multi-Health Systems; 1995.

Hawes SW, Boccaccini MT, Murrie DC. Psychopathy and the combination of psychopathy and sexual deviance as predictors of sexual recidivism: Meta-analytic findings using the Psychopathy Checklist—Revised. Psychological Assessment. 2013; 25:233–243. [PubMed: 23088204]

Hollingshead, AB. Four factor index of social status. New Haven, CT: 1975. Unpublished manuscript

Hopwood CJ, Donnellan MB. How should the internal structure of personality inventories be evaluated? Personality and Social Psychology Review. 2010; 14:332–346. [PubMed: 20435808]

Horn JL. A rationale and test for the number of factors in factor analysis. Psychometrika. 1965; 30:179–185. [PubMed: 14306381]

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

John OP, Caspi A, Robins RW, Moffitt TE, Stouthamer-Loeber M. The “Little Five”: Exploring the Nomological Network of the Five-Factor Model of Personality in Adolescent Boys. Child Development. 1994; 65:160–178. [PubMed: 8131645]

Jones SE, Miller JD, Lynam DR. Personality, antisocial behavior, and aggression: A meta-analytic review. Journal of Criminal Justice. 2011; 39:329–337.

Karpman B. On the need of separating psychopathy into two distinct clinical types: The symptomatic and the idiopathic. Journal of Criminal Psychopathology. 1941; 3:112–137.

Larsson H, Andershed H, Lichtenstein P. A genetic factor explains the association between psychopathic personality and antisocial behavior. Journal of Abnormal Psychopathy. 2006; 115:221–230.

Lilienfeld SO, Watts AL, Francis Smith S, Berg JM, Latzman RD. Psychopathy deconstructed and reconstructed: Identifying and assembling the Personality building blocks of Cleckley’s chimera. Journal of Personality. in press.

Lilienfeld SO, Andrews BP. Development and preliminary validation of a self-report measure of psychopathic personality traits in noncriminal populations. Journal of Personality Assessment. 1996; 66:488–524. DOI: 10.1207/s15327752jpa6603_3 [PubMed: 8667144]

Lilienfeld SO, Patrick CJ, Benning SD, Berg J, Sellbom M, Edens JF. The role of fearless dominance in psychopathy: Confusions, controversies, and clarifications. Personality Disorders: Theory, Research, and Treatment. 2012; 3:327–340.

Lilienfeld SO, Waldman ID, Landfield K, Watts AL, Rubenzer S, Faschingbauer TR. Fearless dominance and the US presidency: implications of psychopathic personality traits for successful and unsuccessful political leadership. Journal of personality and social psychology. 2012; 103:489–505. [PubMed: 22823288]

Lilienfeld SO, Widows MR. Professional Manual for the Psychopathic Personality Inventory-Revised: (PPI-R). 2005

Loeber R, Drinkwater M, Yin Y, Anderson SJ, Schmidt LC, Crawford A. Stability of family interaction from ages 6 to 18. Journal of Abnormal Child Psychology. 2000; 28:353–369. [PubMed: 10949960]

Loeber R, Farrington DP, Stouthamer-Loeber M, Moffitt TE, Caspi A, Lynam D. Male mental health problems, psychopathy, and personality traits: Key findings from the first 14 years of the Pittsburgh Youth Study. Clinical Child and Family Psychology Review. 2001; 4:237–297. DOI: 10.1023/A:1013574903810

Loeber, R.; Farrington, DP.; Stouthamer-Loeber, M.; Van Kammen, WB. Antisocial behavior and mental health problems: Explanatory factors in childhood and adolescence. Mahwah, NJ: Erlbaum; 1998.

Lykken DT. A study of anxiety in the sociopathic personality. Journal of Abnormal Psychology. 1957; 55:6–10. DOI: 10.1037/h0047232 [PubMed: 13462652]

Lykken, DT. The antisocial personalities. Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc; 1995.

Lynam DR. Pursuing the psychopath: Capturing the fledgling psychopath in a nomological net. Journal of Abnormal Psychology. 1997; 106:425–438. [PubMed: 9241944]

Lynam DR, Caspi A, Moffitt TE, Raine A, Loeber R, Stouthamer-Loeber M. Adolescent psychopathy and the Big Five: Results from two samples. Journal of Abnormal Child Psychology. 2005; 33:431–443. [PubMed: 16118990]

Lynam DR, Caspi A, Moffit TE, Wikström PO, Loeber R, Novak S. The interaction between impulsivity and neighborhood context on offending: The effects of impulsivity are stronger in poorer neighborhoods. Journal of Abnormal Psychology. 2000; 109:563–574. [PubMed: 11195980]

Lynam DR, Caspi A, Moffitt TE, Loeber R, Stouthamer-Loeber M. Longitudinal evidence that psychopathy scores in early adolescence predict adult psychopathy. Journal of Abnormal Psychology. 2007; 116:155–165. [PubMed: 17324026]

Lynam DR, Charnigo R, Moffitt TE, Raine A, Loeber R, Stouthamer-Loeber M. The stability of psychopathy across adolescence. Development and Psychopathology. 2009; 21:1133–1153. [PubMed: 19825261]

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Lynam, DR.; Derefinko, K. Psychopathy and personality. In: Patrick, CJ., editor. Handbook of psychopathy. New York: Guilford; 2006. p. 133-155.

Lynam DR, Derefinko KJ, Caspi A, Loeber R, Stouthamer-Loeber M. The Content Validity of Juvenile Psychopathy: An Empirical Examination. Psychological Assessment. 2007; 19:363–367. [PubMed: 17845128]

Lynam DR, Gaughan ET, Miller JD, Miller DJ, Mullins-Sweatt S, Widiger TA. Assessing the basic traits associated with psychopathy: Development and validation of the Elemental Psychopathy Assessment. Psychological Assessment. 2011; 23:108–124. [PubMed: 21171784]

Lynam DR, Miller JD. Psychopathy from a basic trait perspective: The utility of a five-factor model approach. Journal of Personality. in press.

Lynam DR, Miller JD. Fearless dominance and psychopathy: A response to Lilienfeld et al. Personality Disorders: Theory, Research, And Treatment. 2012; 3:341–353.

Lynam DR, Miller DJ, Vachon DD, Loeber R, Stouthamer-Loeber M. Psychopathy in adolescence predicts official reports of offending in adulthood. Youth Violence and Juvenile Justice. 2009; 7:189–207. [PubMed: 22661910]

Lynam DR, Vachon DD. Antisocial personality disorder in *DSM-5*: Missteps and missed opportunities. Personality Disorders: Theory, Research, and Treatment. 2012; 3:483–495.

Lynam DR, Widiger TA. Using a general model of personality to identify the basic elements of psychopathy. Journal of Personality Disorders. 2007; 21:160–178. [PubMed: 17492919]

Magidson JF, Roberts BW, Collado-Rodriguez A, Lejuez CW. Theory-driven intervention for changing personality: Expectancy value theory, behavioral activation, and conscientiousness. Developmental Psychology. 2014; 50:1442–1450. [PubMed: 23106844]

Maples JL, Miller JD, Fortune E, MacKillop J, Campbell WK, Lynam DR, Lance CE, Goodie AS. An examination of the correlates of fearless dominance and self-centered impulsivity among high frequency gamblers. Journal of Personality Disorders. 2014; 28:379–393. [PubMed: 24344842]

Maples J, Miller JD, Wilson LF, Seibert LA, Few LR, Zeichner A. Narcissistic personality disorder and self-esteem: An examination of differential relations with self-report and laboratory-based aggression. Journal of Research in Personality. 2010; 44:559–563.

Marcus DK, Fulton JJ, Edens JF. The two-factor model of psychopathic personality: Evidence from the Psychopathic Personality Inventory. Personality Disorders: Theory, Research, and Treatment. 2013; 4:67–76. DOI: 10.1037/a0025282

Meier BP, Robinson MD, Wilkowski BM. Turning the other cheek: Agreeableness and the regulation of aggression-related primes. Psychological Science. 2006; 17:136–142. [PubMed: 16466421]

Miller JD, Campbell WK. The case for using research on trait narcissism as a building block for understanding Narcissistic Personality Disorder. Personality Disorders: Theory, Research, and Treatment. 2010; 3:180–191.

Miller JD, Lamkin J, Maples-Keller JL, Lynam DR. Viewing the Triarchic Model of Psychopathy through general personality and expert-based lenses. Personality Disorders: Theory, Research, and Treatment. in press.

Miller JD, Lynam DR. Structural models of personality and their relation to antisocial behavior: A meta-analytic review. Criminology. 2001; 39:765–792.

Miller JD, Lynam DR. An examination of the Psychopathic Personality Inventory's nomological network: A meta-analytic review. Personality Disorders: Theory, Research, and Treatment. 2012; 3:305–326. DOI: 10.1037/a0024567

Miller JD, Lynam DR. Understanding psychopathy using the basic elements of personality. Social and Personality Psychology Compass. 2015; 9:223–237.

Miller JD, Lynam DR. Psychopathy and personality: Advances and debates. Journal of Personality. in press.

Miller JD, Lamkin J, Mapless-Keller JL, Lynam DR. Viewing the Triarchic Model of Psychopathy through general personality and expert-based lenses. Personality Disorders: Theory, Research, and Treatment. in press.

Miller JD, Maples-Keller JL, Lynam DR. An examination of the three components of the Psychopathic Personality Inventory: Profile comparisons and tests of moderation. Psychological Assessment. in press.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Miller JD, McCain J, Lynam DR, Few LR, Gentile B, MacKillop J, Campbell WK. A comparison of the criterion validity of popular measures of narcissism and narcissistic personality disorder via the use of expert ratings. Psychological Assessment. 2014; 26:958–969. [PubMed: 24773036]

Neumann CS, Hare RD, Pardini DA. Antisociality and the construct of psychopathy: Data from across the globe. Journal of Personality. in press.

Neumann CS, Wampler M, Taylor J, Blonigen DM, Iacono WG. Stability and Invariance of psychopathic traits from late adolescence to young adulthood. Journal of Research in Personality. 2011; 45:145–152. [PubMed: 21572537]

O'Boyle EH, Forsyth DR, Banks GC, Story PA, White CD. A meta-analytic test of redundancy and relative importance of the dark triad and five-factor model of personality. Journal of Personality. in press.

Pardini DA, Stepp S, Hipwell A, Stouthamer-Loeber M, Loeber R. The clinical utility of the proposed DSM-5 callous-unemotional subtype of conduct disorder in young girls. Journal of the American Academy of Child and Adolescent Psychaitry. 2012; 51:62–73.

Patrick CJ, Cuthbert BN, Lang PJ. Emotion in the Criminal Psychopath: Fear Image Processing. Journal of Abnormal Psychology. 1994; 103:523–534. [PubMed: 7930052]

Patrick CJ, Drislane LE. Triarchic model of psychopathy: Origins, operationalizations, and observed linkages with personality and general psychopathology. Journal of Personality. in press.

Patrick CJ, Fowles DC, Krueger RF. Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. Development and Psychopathology. 2009; 21:913–938. [PubMed: 19583890]

Paulhus DL. Interpersonal and intrapsychic adaptiveness of trait self-enhancement: A mixed blessing? Journal of Personality and Social Psychology. 1998; 74:1197–1208. [PubMed: 9599439]

Reise SP, Henson JM. Computerization and adaptive administration of the NEO PI-R. Assessment. 2000; 7:347–364. DOI: 10.1177/107319110000700404 [PubMed: 11151961]

Roberts BE, Lejuez C, Krueger RF, Richards JM, Hill PL. What is conscientiousness and how can it be assessed? Developmental Psychology. 2014; 50:1315–1330. [PubMed: 23276130]

Robinson MD. Personality, affective processing, and self-regulation: Toward process-based views of extraversion, neuroticism, and agreeableness. Social and Personality Psychology Compass. 2007; 1:223–235.

Rock RC, Sellbom M, Ben-Porath YS, Salekin RT. Concurrent and predictive validity of psychopathy in a batterers' intervention sample. Law and human behavior. 2013; 37:145–154. [PubMed: 22746285]

Ross SR, Benning SD, Patrick CJ, Thompson A, Thurston A. Factors of the Psychopathic Personality Inventory: Criterion-related validity and relationship to the BIS/BAS and Five-Factor Models of personality. Assessment. 2009; 16:71–87. [PubMed: 18703823]

Seara-Cardoso A, Viding E. Functional neuroscience of psychopathic personality in adults. Journal of Personality. in press.

Shanahan MJ, Hill PL, Roberts BW, Eccles J, Friedman HS. Conscientiousness, health, and aging: The life course personality model. Developmental Psychology. 2014; 50:1407–1425. [PubMed: 23244406]

Sherman ED, Lynam DR, Heyde B. Agreeableness Accounts for the Factor Structure of the Youth Psychopathic Traits Inventory. Journal of Personality Disorders. 2014; 28:262–280. [PubMed: 24344841]

Smith ST, Edens JF, Vaughn MG. Assessing the external correlates of alternative factor models of the Psychopathic Personality Inventory–Short Form across three samples. Journal of Personality Assessment. 2011; 93:244–256. [PubMed: 21516583]

Smith SF, Lilienfeld SO, Coffey K, Dabbs JM. Are psychopaths and heroes twigs off the same branch? Evidence from college, community, and presidential samples. Journal of Research in Personality. 2013; 47:634–646.

Steiger JH. Tests for comparing elements of a correlation matrix. Psychological Bulletin. 1980; 87:245–251.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Vachon DD, Lynam DR, Loeber R, Stouthamer-Loeber M. Generalizing the nomological network of psychopathy across populations differing on race and conviction status. Journal of Abnormal Psychology. 2012; 121:263–269. [PubMed: 21842962]

Velicer WF. Determining the number of components from the matrix of partial correlations. Psychometrika. 1976; 41:321–327.

Wechsler, D. Manuel for the Wechsler Intelligence Scale for Children, revised. Psychological Corporation; 1974.

White JL, Moffitt TE, Caspi A, Bartusch DJ, Needles DJ, Stouthamer-Loeber M. Measuring impulsivity and examining its relationship to delinquency. Journal of Abnormal Psychology. 1994; 103:192–205. DOI: 10.1037/0021-843X.103.2.192 [PubMed: 8040489]

Widiger, TA.; Mangine, S.; Corbitt, EM.; Ellis, CG.; Thomas, GV. Personality Disorder Interview–IV: A semistructured interview for the assessment of personality disorders. Odessa, FL: Psychological Assessment Resources; 1995.

Wilkowski BM, Robinson MD, Meier BP. Agreeableness and the prolonged spatial processing of antisocial and prosocial information. Journal of Research in Personality. 2006; 40:1152–1168.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Table 1

Scale Construction Results

Scale	No. of Items	Sample Item	Alpha	UG1 Convergent r	UG2 Convergent r
Fearless/Dominance	15		.70	.70	.77
Social Influence	6	He is open and straightforward. (R)	.55	.68	.70
Fearlessness	5	He is energetic and full of life.	.56	.43	.53
Stress Immunity	4	He is nervous and fearful. (R)	.58	.68	.74
Self-centered Impulsivity	14		.86	.77	.67
Rebellious Non-conformity	4	He tries to see what and how much he can get away with. He usually pushes limits and tries to stretch the rules.	.71	.50	.39
Machiavellian Egocentricity	3	He tries to get others to do what he wants by playing up to them. He acts charming in order to get his way.	.64	.69	.71
Carefree Nonplanfullness	4	He plans things ahead; he thinks before he does something. He “looks before he leaps.” (R)	.76	.63	.65
Blame Externalization	3	He tries to blame other people for things he has done.	.50	.51	.22
Coldheartedness	3	He is a warm person and responds with kindness to other people. (R)	.66	.43	.41

Note: Ns = 198 for UG Sample 1 and 239 for UG Sample 2.

Clin Psychol Sci. Author manuscript; available in PMC 2017 May 01.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 2

Concurrent Relations of Age-13 FD/SCI scores with Age-13 Criteria

Measure	SCI	FD	Z-value
Psychopathy and Risk			
Childhood Psychopathy Scale	.86**	-.28**	20.18**
Risk Status	.35**	-.04	5.27**
Family and Demographic Factors			
Harsh Punishment	.20**	.03	2.18*
Inconsistent Discipline	.12*	-.03	1.96*
Lax Supervision	.22**	-.09	4.00**
Low Positive Parenting	.23**	-.16**	5.05**
Socioeconomic Status	-.07	.12*	-2.35**
Single-parent Family	.17**	-.01	2.26*
Neighborhood Quality	.05	.11*	.83
Individual Differences			
Verbal IQ	-.21**	.08	-3.73**
Behavioral Impulsivity	.59**	.02	8.11**
Cognitive Impulsivity	.18**	-.07	3.17**
Neuroticism	.28**	-.77**	16.53**
Extraversion	.03	.61**	-8.53**
Openness	-.33**	.21**	-7.03**
Agreeableness	-.74**	.19**	-14.48**
Conscientiousness	-.78**	.39**	-18.40**
Delinquency			
Peers	.10*	.00	1.25
Self-reported	.27**	-.04	4.09**

Note:

*=$p<.05$,

**=$p<.01$;

z-value=z transformed score from Steiger's test of dependent correlations;

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Table 3

Prospective Relations of Age-13 FD/SCI scores with Age-24 Criteria

Measure	SCI	FD	Z-value
Psychopathy, APD, and Official Records			
PCL-SV Total	.29**	.00	3.13**
PCL-SV Interpersonal	.20**	.05	1.57
PCL-SV Affective	.12*	-.02	1.46
PCL—SV Impulsive	.28**	-.05	3.55**
PCL-SV Antisocial	.32**	.02	3.34**
APD Symptoms	.26**	-.08	3.62**
Arrest Variety	.20**	.06	1.88*
Conviction Variety	.21**	.02	2.49**
Life Outcomes			
Years of Education	-.33*	.06	-4.01**
Time Spent Unemployed	.20**	-.07	2.83**
Child Before Age 18	.13	.11	.22
Incarcerated After Age 18	.17**	.03	1.84*
Substance Use/Abuse			
Cigarette Use	.18*	.02	1.72*
Alcohol-related Problems	.05	.12*	-.97
Drug-related Problems	.11*	-.07	2.23*
Personality			
Neuroticism	.14*	.01	1.37
Extraversion	-.06	.17**	-2.50**
Openness	-.08	.08	-1.72*
Agreeableness	-.12*	-.05	-.76
Conscientiousness	-.16**	.06	-2.25*
Internalizing			
Depression	-.04	-.02	-.24
Anxiety	.02	-.08	1.00
Somatic Complaints	.11	-.08	1.99*

Note:

*=p<.05,

**=p<.01;

z-value is from Steiger's test of dependent correlations.