



Published in final edited form as:

J Adolesc. 2007 August ; 30(4): 537–547.

Personality Trait Differences in Boys and Girls with Clinical or Sub-clinical Diagnoses of Conduct Disorder Versus Antisocial Personality Disorder

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Abstract

This study tested differences in personality traits measured by the Multidimensional Personality Questionnaire (MPQ) in a community sample of adolescents with definite or probable conduct disorder (CD) diagnoses that did not progress to a diagnosis of antisocial personality disorder (ASPD) by early adulthood ($n = 43$), those with definite or probable ASPD that persisted into early adulthood ($n = 68$), or controls with neither a CD nor an ASPD diagnosis ($n = 716$) to examine whether antisocial behavior disorders that differed in course were associated with differences in personality traits. As expected, boys and girls with ASPD were significantly different from controls on Constraint, and those with ASPD were significantly lower on Constraint than those with only CD. Results suggest that individual differences in certain personality traits may contribute to differences in the type of antisocial behavior disorder that emerges and thereby to the course of antisocial behavior.

Keywords

adolescent; antisocial personality disorder; conduct disorder; personality

Personality disorders affect around 11% of the general population (Ekselius, Tillfors, Furmark, & Fredrikson, 2001), making them among the most common mental disorders. Antisocial personality disorder (ASPD) is marked by antisocial behavior that begins in childhood and persists into adulthood and affects about 4.5% of the population (Robins, Tipp, & Pryzbeck, 1991). The current conceptualization of personality disorders in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994) requires that a maladaptive personality style be persistent with origins in adolescence or early adulthood. This conceptualization recognizes the consistency of personality and its foundations in adolescence. The DSM conceptualization of ASPD also raises the issue of the role of personality in the course of antisocial behavior. Examination of various psychological dimensions, such as personality, that are associated with antisocial behavior disorders will increase our understanding of these disorders.

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One of the most widely used personality trait models, the Big Five or Five Factor Model, has been used in research examining personality as it relates to antisocial behavior in adolescents (e.g., John, Caspi, Robins, Moffitt, & Stouthamer-Loeber, 1994). Eysenck's 3-factor model of personality has also been studied in relation to antisocial behavior in adolescents (Saklofske & Eysenck, 1980) and was among the first of the trait models studied in this regard. More recently, Tellegen's 3-factor model of personality has been used in research on externalizing and antisocial behavior (e.g., Krueger, McGue, & Iacono, 2001). The commonalities among personality trait models are notable, and preferences for the use of one model over another can surely be debated (Markon, Krueger, & Watson, 2005). The present study utilized a sample on which Tellegen's (2000) Multidimensional Personality Questionnaire (MPQ) was administered and, therefore, the focus of the literature review is on that measure.

The literature provides ample evidence of the association of personality traits like Constraint (a broad measure of behavioral control, sensation seeking, and attitudes toward authority) and Negative Emotionality (a broad measure of affective reactivity and proneness to negative emotions) to antisocial behavior in various forms. For example, Krueger, Schmutte, Caspi, Moffitt, Campbell, and Silva (1994) examined Negative Emotionality, Constraint and other personality traits associated with delinquency in a sample of 862 18-year-old boys and girls using the MPQ. Various reports of antisocial behavior (including official records) were correlated with scores from the MPQ. Low Constraint and high Negative Emotionality were strongly associated with delinquency in both genders. This finding is consistent with other studies linking a similar personality profile to antisocial behavior in boys (Taylor, Iacono, & McGue, 2000; Tremblay, Pihl, Vitaro, & Dobkin, 1994), to ASPD and psychopathy in men (Elkins, Iacono, Doyle, & McGue, 1997; Verona, Patrick, & Joiner, 2001), to general composites of externalizing behavior in men and women (Krueger et al., 2001), and to CD and composites of antisocial behavior in adolescent boys and girls (Moffitt, Caspi, Rutter, & Silva, 2001). Finally, a recent multivariate investigation of personality and externalizing disorders in children and adolescents showed that the *pattern* of high Negative Emotionality and low Constraint was associated with conduct disorder (CD), attention-deficit/hyperactivity disorder (ADHD), and the co-morbid CD-ADHD condition with the co-morbid disorder presentation being associated with a significantly more severe pattern than the single conditions (Cukrowicz, Taylor, Schatschneider, & Iacono, in press). Thus, there is little debate about the association of antisocial behavior and Constraint and Negative Emotionality.

What is less clear is whether personality traits are associated similarly with various antisocial behavior disorders. The DSM diagnostic system includes CD (marked by fighting, lying, and various other antisocial behaviors diagnosed in children) and ASPD (which requires the presence of adult antisocial behaviors [AAB] in addition to evidence of CD). Most children with CD will not go on to evidence ASPD (Robins, 1966), and thus one of the differences between CD and ASPD is the persistence of the behavior. Moffitt (1993) proposed that persistent and desistent antisocial behavior is underlain by differences in cognitive functioning, biological factors, and social pressures. Personality traits may serve to organize behavior toward antisocial versus prosocial trajectories, and some evidence suggests that boys who differ in their course of antisocial behavior differ on personality dimensions.

Moffitt, Caspi, Dickson, Silva, and Stanton (1996) examined 11 primary MPQ personality traits at age 18 among boys designated as life-course-persistent (extreme antisocial behavior in childhood and adolescence), adolescence-limited (extreme antisocial behavior only in adolescence), abstainers (no extreme antisocial behavior), and unclassified boys. They found that both life-course-persistent and adolescence-limited antisocial boys differed from abstainers on various primary MPQ scales that form the Constraint and Negative Emotionality. Antisocial boys showed lower Traditionalism, lower Control, higher Aggression, and higher Alienation than abstainers. The two delinquent groups differed significantly from each other

on Alienation (a Negative Emotionality scale) and on Social Potency and Social Closeness (two scales that contribute to the Positive Emotionality factor). Moffitt et al. (1996) found that the profile of MPQ scores was more extreme in the pathological direction (e.g., high Aggression scale scores) among life-course-persistent boys than among adolescence-limited boys, suggesting that the course of antisocial behavior may be linked to individual differences in personality. This work provided new insights into the relationship between personality traits and the course of antisocial behavior, and suggested the need for further work.

Much of the previous research on personality and antisocial behavior used cross-sectional data and operationalized antisocial behavior in terms of delinquency, leaving unanswered questions about the extent to which personality traits differentially characterize psychological disorders defined by antisocial behavior. Furthermore, there is limited research on gender effects on the associations between personality and antisocial behavior. The present study aimed to extend the work of Moffitt et al. (1996;2001) and others by examining the association of personality traits to DSM-defined antisocial behavior disorders that differ in course (CD only vs. CD that progresses to ASPD by young adulthood) and to examine these associations in both boys and girls. In addition, the present study used longitudinal data to classify boys and girls into diagnostic groups, which provided a means to examine personality factors as they relate to differences in persistence and desistence of antisocial behavior while also providing information about the relation of personality to diagnostic categories (CD and ASPD) common in both research and clinical settings. Based on previous findings regarding the associations between personality traits and antisocial behavior, the following hypotheses were examined:

1. Adolescents diagnosed with CD only or ASPD will be significantly higher on Negative Emotionality (and its associated subscales) and lower on Constraint (and its associated subscales) than controls with neither diagnosis, reflecting the expectation that antisocial behavior in general is associated with deviance in personality trait levels.
2. Adolescents with ASPD will be significantly lower on Constraint (and its associated subscales) and higher on Negative Emotionality (and its associated subscales) than adolescents with CD only, reflecting the expectation that the persistent antisocial behavior disorder is underlain by more deviant personality trait levels than are nonpersistent forms of antisocial behavior disorder.

Method

Participants

Participants were drawn from 578 16- to 18-year-old boys ($M = 17$; $SD = .45$) and 674 girls ($M = 17$; $SD = .65$) participating in the Minnesota Twin Family Study (MTFS), an ongoing longitudinal study of substance use problems and related behaviors among same-sex twins and their parents. Twin pairs were identified through Minnesota state birth records. Exclusion criteria were minimal (twins could not be adopted nor could they have a physical or intellectual disability as assessed by detailed structured phone interview with twins' mother). After description of the study to participants, parents provided informed written consent for their own and their minor child's participation in the MTFS. Children under 18 provided written assent to participate. Consent was obtained prior to beginning any procedures, and the study was approved by the IRB. Participants were paid for completing the study. The racial composition of the MTFS (98% white) reflects the demographics of Minnesota in the birth years sampled.

Measures

Personality was measured with the MPQ (Tellegen, 2000), which includes 10 primary dimensions of personality and the three higher-order factors of Positive Emotionality (a broad measure of positive well being and proneness toward positive emotions) and the aforementioned Negative Emotionality and Constraint. Constraint is a composite of Traditionalism (reflecting views about social rules and authority), Control (an impulse/behavioral control dimension), and Harm Avoidance (a sensation-seeking dimension). Negative Emotionality is a composite of Aggression (reflecting aggressive tendencies), Alienation (a dimension of suspiciousness and one's sense of inclusion in society), and Stress Reaction (proneness to negative emotions, tension, and mood lability). Positive Emotionality is a composite of Well Being (reflecting level of happiness), Achievement (a dimension of goal striving), Social Potency (a social competence dimension), and Social Closeness (reflecting one's closeness in relationships with others). The original MPQ was comprised of 300 items. Participants in the MTFs completed a shortened (198-item) version of the MPQ, which was developed by Tellegen for use in the MTFs and has been used in previous publications (e.g., Iacono, Carlson, Taylor, Elkins, & McGue, 1999; Krueger et al., 2001; McGue, Slutske, Taylor, & Iacono, 1997). The MPQ was administered at the intake assessment to adolescent twins. The range of raw scores on the MPQ varied across scales, so to ease interpretation of the results, raw scores were converted to T-scores with a mean of 50 ($SD = 10$) using the entire sample of available MPQ data.

Participants were assessed for CD and ASPD using criteria from DSM-III-R (American Psychiatric Association, 1987), which was the diagnostic standard when the MTFs began. Notably, the CD and ASPD criteria sets in the DSM-III-R are largely the same as those in DSM-IV. Under the DSM-III-R system, the ASPD diagnosis requires four adult antisocial behavior (AAB) symptoms occurring after age 15 and a diagnosis of CD before age 15. The ASPD diagnosis is also limited to people age 18 or older. However, recent research suggests that personality disorders (including ASPD) can be identified in younger adolescents (Kasen, Cohen, Skodol, Johnson, & Brook, 1999). In addition, the present authors have demonstrated that ASPD is likely a valid diagnosis in adolescents as young as age 16 (Taylor, Elkins, Legrand, Peuschold, & Iacono, 2005). Thus, ASPD was examined without adherence to the age onset criterion in the DSM.

Trained interviewers with at least a B.A. degree assessed symptoms of CD and AAB. Lifetime criteria of ASPD and CD were assessed in adolescents at both the intake (age 17) and first follow-up (age 20) assessments with the Structured Clinical Interview for DSM-III-R Personality Disorders (SCID-II; Spitzer, Williams, Gibbons, & First, 1987). A parent informant, usually the mother, reported on each twin's lifetime symptoms of CD via the Diagnostic Interview for Children and Adolescents - Revised, parent version (DICA-R-P; Herjanic & Reich, 1982; Reich & Welner, 1988) at the intake assessment. At age 20, the twins completed the study without their parents and were the sole informants on all interviews. At both the intake and first follow-up assessments, a clinical case conference was used to determine which symptoms had been met for each participant. A team of at least two advanced clinical graduate students considered all clinical data from the interviews for a participant and (by consensus) assigned symptoms of disorders using DSM-III-R criteria. Members of a twin pair were rated independently during separate case conferences, and the consensus team was blind to the zygosity of the twin and to the symptoms and diagnoses assigned to the co-twin of the twin that they were rating. At the intake assessment, parent interviews regarding a twin were reviewed in a separate case conference from the one in which the twin interviews were reviewed (yielding independent case conference ratings of parent- and self-reported symptoms). Symptoms assigned during the case conferences were entered into a database and simple computer algorithms (based on DSM-III-R criteria) were employed to combine the

symptom information to produce study diagnoses. For CD diagnoses at the intake assessment, the computer algorithm employed a best estimate strategy wherein a symptom counted toward a diagnosis if either informant endorsed it (Bird, Gould, & Staghezza, 1992). The consensus procedure was repeated by an independent team of graduate students (blind to symptoms and diagnoses assigned by the original team) on a random sample of cases, which produced diagnostic reliability coefficients (kappa) at or above .75.

Groups

Adolescents with CD and ASPD data from both the intake assessment (at age 17) and the first follow-up assessment (at age 20) were eligible for this study ($N = 1,107$). It was important to create CD and ASPD groups that were as distinct as possible in order to test our hypotheses about differential personality traits associated with those disorders. As such, most (but not all) participants fit clearly into one of our study groups. Of those eligible, 910 (82%) could be assigned to one of the study groups. The remaining 18% did not meet the criteria for any group (e.g., not enough CD or AAB symptoms to qualify for a diagnostic group but too many to be considered a control; or too many AAB symptoms to be in the CD only group but not enough to be in the ASPD group; etc.). Eighty-three of those assigned to groups did not have MPQ data leaving a final sample of 827 for this study. (Participants with and without MPQ data within each group were compared on their number of CD and AAB symptoms and no significant differences were found.) The control group contained 716 participants (488 girls; 228 boys) with no CD or ASPD diagnosis through age 20 (participants were allowed to have a symptom of CD and/or AAB at one or both assessments). The CD only group contained 43 participants (18 girls; 25 boys) who had a probable (2 symptoms plus 6-month duration) or definite CD diagnosis (3 or more symptoms plus duration) by age 17 and no AAB diagnosis at age 17 or 20 (participants were allowed to have a symptom of AAB at one or both assessments). The ASPD group contained 68 participants (17 girls; 51 boys) who had a probable or definite CD and/or AAB diagnosis at age 17 and evidence of ASPD (i.e., one or more AAB symptoms) at age 20. Thus, at age 17, the ASPD group displayed significant adult antisocial behavior, and this behavior persisted to age 20. Although it is tempting to label this ASPD group as having “persistent CD,” that would not be accurate as the CD symptoms are not what persist in cases of ASPD; rather, AAB symptoms, which are qualitatively different from CD symptoms, develop and persist.

Analyses

An assumption when using ANOVA is that the sample contains people whose scores are not correlated. The present study draws data from twins whose scores *are* likely correlated to some extent and the analyses must account for this correlation. As such, we conducted analyses using the Mixed procedure in SPSS 12.0 which provided a multilevel framework that allowed twins to be nested within families. This procedure provided an ANOVA (F -test) comparison for fixed effects (i.e., group) while accounting for the correlation in scores among twins (which were modeled as random effects). For each MPQ scale, we modeled (using restricted maximum likelihood estimation) fixed effects in a full factorial model which produced separate F -tests for group, gender, and the group \times gender interaction. The group \times gender interaction was included to statistically test whether personality trait levels differed by gender within the study groups. In addition, each gender was analyzed separately to ensure that the main effects for group were present in both the larger sample of boys and the smaller sample of girls. To correct for the number of tests conducted, alpha was adjusted to .005 (.05/10) for the omnibus F -tests for the 10 primary MPQ scales and to .017 for the three higher-order MPQ scales. Follow-up contrasts to significant group main effects were conducted using the Least Significant Difference test with alpha set to .05.

Results

Table 1 presents a summary of the group comparisons on each MPQ scale. Scores on a few individual scales were incomplete or missing resulting in slight variation in the df for analyses. The results partially supported the first hypothesis. Although the effect for group was significant for Negative Emotionality and Constraint and for most of their subscales, controls did not differ significantly from boys and girls with CD only on any scale but Aggression. As expected, the ASPD group differed significantly from the CD only group on Constraint and its subscales providing support for our second hypothesis. However, those groups differed significantly only on the Aggression subscale of Negative Emotionality.

The group x gender interaction was not significant for any of the MPQ scales, indicating no statistical difference in the pattern of findings across gender within groups. To confirm this, analyses were conducted separately by gender and all group differences were the same across gender with one exception: controls and CD only boys did not differ significantly on the Aggression scale. The main effect for gender (tested in the models examining the full sample) was significant ($p < .001$) for two scales: Social Closeness (boys scored lower than girls) and Aggression (boys scored higher than girls).

Discussion

Previous research has linked certain personality traits to antisocial behaviors in men, women, and children. Thus, personality traits may serve as part of the underlying psychological structure for the development of certain psychological disorders, including those related to antisocial behavior. Though previous research has examined personality traits in adolescents with CD and other associated conditions (e.g., ADHD), there are no published reports on the personality traits associated with DSM-defined antisocial behavior disorders (CD and ASPD) in the same sample. Given the practical clinical relevance of the DSM in identifying antisocial youth, it is important to investigate correlates of antisocial behavior defined by DSM diagnostic categories. The present study examined whether various personality traits were associated with antisocial behavior disorders in adolescents that differed in their progression in order to provide additional insights into factors that might relate to the development and course of antisocial behavior.

Our results partially supported our first hypothesis in that adolescent boys and girls with ASPD were significantly different from controls on Constraint and each of its subscales and on Negative Emotionality and two of its subscales (Alienation and Aggression). However, adolescents with CD only were not different from controls on most scales. These results suggest that adolescents who have CD that does not develop into ASPD are different in their personality from non-antisocial adolescents only with regard to dimensions related to aggression, and not with regard to personality dimensions related to negative affectivity. Our second hypothesis was supported in that adolescent boys and girls with ASPD were significantly lower on Constraint and all of its subscales than adolescents with a CD only diagnosis. However, contrary to expectation, those groups differed significantly only on the Aggression subscale of Negative Emotionality. These results suggest that personality traits related to behavioral control, thrill-seeking, and traditional values may be related to which form of disorder manifests: a more persistent personality disorder (ASPD) or a non-persistent period of antisociality (CD). Finally, our exploration of gender differences showed that boys and girls across groups had similar personality patterns, suggesting that personality traits are associated with antisocial behavior disorders in a similar manner across gender.

The present findings extended the work of Moffitt et al. (1996;2001) and others to clinically defined groups of persistent and desistent antisocial adolescents. The present results also

extended Moffitt et al.'s (2001) work with boys and girls and provided support for the notion that antisocial behavior disorders are associated with similar personality traits in boys and girls. Furthermore, the present study extended earlier findings from the MTF sample (e.g., Iacono et al., 1999) and other samples (e.g., Ge & Conger, 1999; Krueger, 1999; Krueger et al., 1994) by demonstrating a greater deviance in personality features among adolescent boys and girls with ASPD as compared to adolescents with only CD on the Constraint personality dimension. Our results were not as consistent with previous findings with regard to Negative Emotionality. The Aggression subscale did show differences across antisocial behavior disorder groups as had been found previously, but the Negative Emotionality higher-order factor showed a significant difference only between the ASPD group and controls. This inconsistency may reflect differences in the definition used for antisocial behavior and methodology in that a previous investigation found a significant overall correlation between antisocial behavior and Negative emotionality (Krueger et al., 1994), whereas we examined differences in Negative Emotionality between two diagnostic groups of antisocial youth. Furthermore, the Aggression subscale taps a personality dimension with ties in content to the behavioral disorders used to define groups in this study and, therefore, our findings with regard to that scale are not surprising, although they are consistent with the findings of Moffitt et al. (1996) in which life-course-persistent delinquents had high Aggression scores than adolescence-limited delinquents.

In sum, the present results provided some support for the idea that personality may serve to organize behavior that leads to a more persistent antisocial behavior trajectory for some (i.e., those with more extreme levels of Constraint) and a desistent antisocial behavior trajectory for others (i.e., those with less extreme levels of Constraint). Our careful assignment of participants to diagnostic groups allowed us to compare an apparently desistent antisocial group (CD only) whose antisocial behavior was limited to childhood/adolescence to a group with a continuous course of antisocial behavior (ASPD group) and our results suggest that adolescents with CD only are not only descriptively different but may also be etiologically distinct from those with ASPD. Given that the control and CD only groups did not differ significantly on most personality traits, it seems unlikely that personality traits contribute substantially to the etiology of CD when it is not persistent but rather confined to adolescence. Instead, other factors such as peer influences (e.g., antisocial friends, rejection by peers) might be a relatively more important influence on the development of non-persistent CD than underlying, genetically-influenced personality traits. In contrast, the etiology of ASPD may indeed include extreme personality traits such as aggression, lack of adherence to traditional values, and sensation-seeking, and the stability of those traits may in part underlie the stability or continuity in the antisocial behavior of those with ASPD.

The major strengths of this study included the use of a) a large epidemiological sample, b) structured clinical interviews for measuring CD and ASPD, c) a personality measure that has been widely used in research on antisocial behavior, d) longitudinal data to define groups that afforded a comparison of CD cases that do not develop into ASPD to cases of CD that do make such a progression to cases of late-onset AAB without a preceding CD diagnosis, and e) girls in the sample to allow for a comparison cross gender. Although some might argue that the use of twins and not singletons was a limitation of the present study, recent research has demonstrated the comparability of MPQ personality trait variances from twin and singleton samples, indicating that twins are representative of the general population with regard to personality (Johnson, Krueger, Bouchard, & McGue, 2002). The use of a predominantly white sample was a limitation of the present study and results might not generalize to non-white populations.

The nature of the antisocial behavior disorders makes them particularly problematic for society, especially in the case of ASPD, which has a persistent course. The present study suggests that

individual differences in certain personality traits may be related to the type of antisocial behavior disorder that develops, and this link is present by adolescence. This finding may have implications for interventions aimed at identifying youth who are at high risk for persistent antisocial behavior problems. Indeed, personality assessment is inexpensive and noninvasive and could help improve efforts at predicting which children with CD will progress to an ASPD diagnosis. Future studies should examine the contribution of personality traits to the development of CD and ASPD to shed light on the extent to which personality shapes the trajectory of antisocial behavior and the potential effects that antisocial behavior problems have on the shape of personality.

Acknowledgements

This research was supported in part by National Institute of Drug Abuse grant DA 05147 and DA 13240 and National Institute on Alcohol Abuse and Alcoholism grant AA 09367.

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Table 1

Summary of Group Comparisons on Personality Scales

Scale	F (df)	p	Control (n = 716) Mean (SD)	CD Only (n = 43) Mean (SD)	ASPD (n = 68) Mean (SD)
Constraint	34.38 (2, 802.78)	.001	49.08_a (8.95)	46.01_a (8.63)	37.02_b (10.11)
Control	23.70 (2, 794.47)	.001	48.73 _a (9.37)	47.94 _a (8.66)	39.75 _b (9.74)
Harm Avoidance	16.31 (2, 808.77)	.001	48.71 _a (9.00)	46.04 _a (7.67)	39.84 _b (9.76)
Traditionalism	19.61 (2, 806.83)	.001	50.15 _a (9.12)	48.49 _a (10.41)	41.17 _b (10.55)
Negative Emotionality	7.06 (2, 794.29)	.001	51.43 _a (8.97)	53.82 _{ab} (8.68)	56.47 _b (8.30)
Stress Reaction	1.54 (2, 806.57)	.213	51.18 (9.52)	50.55 (9.65)	51.87 (8.12)
Alienation	5.74 (2, 802.51)	.003	51.82 _a (8.94)	53.65 _{ab} (7.86)	56.09 _b (8.10)
Aggression	26.92 (2, 800.12)	.001	50.83 _a (8.86)	56.28 _b (8.28)	61.26 _c (9.08)
Positive Emotionality	0.43 (2, 807.67)	.651	51.08 (9.93)	49.85 (9.84)	51.18 (10.50)
Well Being	2.58 (2, 812.76)	.076	50.74 (9.76)	48.42 (9.62)	48.41 (10.82)
Social Potency	2.29 (2, 806.75)	.101	50.65 (9.37)	52.32 (9.37)	54.06 (9.60)
Achievement	3.02 (2, 802.85)	.049	49.52 (10.08)	47.13 (11.21)	49.15 (10.76)
Social Closeness	0.21 (2, 791.62)	.812	51.79 (9.59)	50.95 (10.94)	48.61 (10.24)

Note: Primary scales for each higher-order scale are listed under their higher-order scale and are denoted by an indent. Bold type indicates that the F-test for the scale was significant at the corrected p-value (.017 for higher-order scales; .005 for primary scales). Differences are reported only for comparisons made following a significant F-test at the corrected p-value; means in the same row that do not share a subscript differ at p < .05 in the least significant difference comparison.