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ABSTRACT

Previous research has demonstrated that aggression (AGG) and non-aggressive rule-breaking (RB) represent elements of antisocial behavior with different etiological mechanisms and associations to personality and psychopathology. However, these constructs have not been investigated in an adult clinical sample. In the current study, interview and self-report derived AGG and RB were associated with personality traits and disorders as well as functioning across several domains, family history, concurrent psychopathology, and prospective behaviors. Both AGG and RB were similarly related to disagreeableness. RB was uniquely related to low conscientiousness, cluster B personality disorders, functioning, problems in childhood, suicide risk, arrests, and substance use disorders. AGG (+) and RB (−) were differentially related to obsessive–compulsive personality disorder and conscientiousness. Gender moderation effects were limited. It was concluded that AGG and RB represent separable components of antisocial behavior with differential and clinically meaningful correlates in an adult clinical sample.

1. Introduction

Antisocial behavior (ASB) comprises a set of behaviors that violate social norms and are characterized by a disregard for others' rights. Although ASB during childhood and adolescence is predictive of criminal behavior during adulthood (Robins, 1966), the specific manifestation of these behaviors (e.g., physical assault versus theft) varies widely across individuals (Lynam et al., 2007). As some have suggested that this heterogeneity has important long-term consequences for behavioral outcomes (Lynam, 1996), recent research has sought to better understand its origin and correlates. Correlational, factor-analytic, experimental, and behavior genetic data suggest that much of this heterogeneity is captured by two moderately related types of ASB: Aggression (AGG) and non-aggressive rule-breaking (RB) (Moffitt, 2003; Raskin-White et al., 2001).

In this model, AGG is thought to be a highly heritable (Eley et al., 1999), childhood-onset factor related to a predisposition to negative affect that results in maladaptive and ineffective coping mechanisms under stress and a long-term pattern of violent (i.e., "overt") ASB. RB, by contrast, is presumed to reflect a somewhat more transient and environmentally-mediated (Eley et al., 2003; 1999; Tackett et al., 2005) adolescent-onset factor resulting in non-violent (i.e., "covert") ASB. Factor analyses of conduct disorder and oppositional defiant behaviors among children and adolescents support this distinction (Tackett et al., 2005). Research also shows that AGG is more stable than RB in childhood and has an earlier age of onset (Stanger et al., 1997), supporting the hypothesis that these phenomena are associated with different developmental trajectories. Further, AGG and RB appear to be associated with different candidate genes (Burt and Mikolajewski, 2008) and differential timing of genetic expression with age (Burt and Niederhiser, in review; Silberg et al., 2007). In particular, whereas genetic influences on AGG tend to emerge in early childhood, genetic influences on RB are first expressed during adolescence. Finally, evidence suggests that AGG is related to negative affectivity and is associated with affective dysregulation under stress, whereas RB is related to disinhibition and unrelated to affect dysregulation (Burt and Donnellan, 2008; Burt and Larson 2007).

Critically, research extending these childhood and adolescent models of AGG and RB upward to adults has been limited. Even

so, this model has potential relevance to adults of both genders and to adult clinical concerns. In addition, these dimensions may have relevance for describing individuals with a host of disorders of known connection to ASB more generally: antisocial, borderline, paranoid, and narcissistic personality disorders, as well as Axis I disorders such as intermittent explosive disorder, ADHD, and bipolar mood disorder. Research is therefore needed to demonstrate whether and how these constructs affect behaviors and functioning across gender, age, and clinical status in samples in which levels of these constructs vary and diagnoses are diverse. In view of this need, we tested several hypotheses in collaborative longitudinal personality disorders study (CLPS) data, a demographically diverse clinical sample in which personality and other disorders are well represented.

First, we hypothesized that reliable measures of AGG and RB could be constructed from interview and self-report measures of antisocial personality and conduct disorders. Second, we predicted that AGG and RB would both be related to low agreeableness but would have differential relations to other personality traits, specifically, AGG to neuroticism and RB to conscientiousness, thereby replicating results from studies examining normative male adolescents (Burt and Donnellan, 2008). Third, we hypothesized that both AGG and RB would relate to cluster B personality disorders (PDs), given that these disorders are characterized by both negative temperament and disinhibition (Clark, 1993; Morey et al., 2003); but that they would be differentially related to obsessive–compulsive PD. Individuals with this diagnosis are described as rule-bound, interpersonally stubborn, and controlling in the diagnostic criteria (APA, 1994), suggesting it would be negatively related to RB, potentiating a positive partial relationship with AGG.

Fourth, we predicted that AGG would relate to poor interpersonal functioning and RB to poor work functioning. This exploratory hypothesis was based on the conceptual relation of AGG to affective dysregulation (and thus interpersonal dysfunction) and RB to impulsivity and maladaptive behavior in structured environments such as the workplace. Fifth, we expected AGG to relate to increased risk for depression and suicidal behavior, given its previously documented relation to negative temperament in multiple samples of normative adolescents. Conversely, we anticipated that RB would relate to increased risk for substance use disorders and arrests, given the rule-breaking nature of these behaviors. Furthermore, given that genetic influences on RB are weaker than those on AGG, whereas shared environmental influences on RB are stronger (Eley et al., 1999), we predicted that RB would be uniquely associated with disturbed family environment, and thus predicted a relation between RB and childhood abuse, neglect, and witnessing violence. Finally, we expected that although AGG and RB levels would be higher among men than women (Kramer et al., 2008; Moffitt et al., 2001), hypothesized relations would generalize across genders.

2. Method

2.1. Participants

Participants were 733 patients with PDs (N = 629; 86%) or major depressive disorder recruited from multiple clinical sites for the CLPS project (see Gunderson et al., 2000 and McGlashan et al., 2000 for sample details). Of relevance for this study, 9% of patients met criteria for antisocial personality disorder and averaged 2.26 antisocial symptoms. The mean age of participants was 32.50 (SD = 8.11; range = 18–45). Women represented 64% (N = 467) of the sample; 69% (N = 506) of participants were white, 15% (N = 108) were black, 13% (N = 94) were Hispanic, and the rest (N = 25) reported other ethnicities.

2.2. Measures

Diagnostic interview for DSM-IV personality disorders (DIPD-IV): The DIPD-IV (Zanarini et al., 1996) is a semi-structured interview that assesses PD criteria, which must be present over at least the previous two years to count toward the diagnosis. Adequate inter-rater reliability was found for all disorders diagnosed five times or more in a baseline sub-sample (Zanarini et al., 2000). AGG and RB were constructed from antisocial personality/conduct disorder symptoms as described below. Sums of the other PD symptoms were used as dependent variables.

Schedule for nonadaptive and adaptive personality (SNAP): The SNAP (Clark, 1993) is a 375 item self-report questionnaire designed to assess personality traits in both the higher-order/temperamental and lower-order/abnormal range. Personality disorders scales can also be scored with the SNAP (Clark, 1993); AGG and RB were constructed from the antisocial/conduct disorder personality disorder scale as described below.

NEO personality inventory, revised (NEO-PI-R): The NEO-PI-R (Costa and McRae, 1992) was designed to provide a comprehensive assessment of the five factors of the Five-Factor Model (FFM). Internal consistency reliabilities for the five domains in this sample ranged from 0.87 to 0.92 (Morey et al., 2002). The five domain scores represented dependent variables in the current study.

Longitudinal interval follow-up examination (LIFE): The LIFE (Keller et al., 1987) is a structured interview that assesses functioning in interpersonal, recreational, and occupational domains and several other outcome variables. Participants were assessed with the LIFE at baseline and every 6 months for 4 years. Baseline functioning scores from this instrument were combined with self-reported functioning scores as described below. The presence vs. absence of suicidal behavior (including attempts and gestures) and arrests over 4 years also represented dependent variables.

Social adjustment scale, self-report (SAS-SR): The SAS-SR (Weissman and Bothwell, 1976) is a self-report instrument that yields estimates of interpersonal, occupational, and recreational functioning. Baseline scores from the SAS-SR for these three domains were factor analyzed in combination with those from the LIFE. Three factors emerged with eigenvalues > 1, and after oblique rotation, factor structure coefficients suggested that these factors represented social, work, and recreational domains free from method effects. Factor scores were used in this study to represent these functional domains.

Childhood experiences questionnaire-revised (CEQ-R): The CEQ-R (Zanarini et al., 1997) is a clinician-rated interview that was administered at baseline to assess a range of retrospectively reported pathological experiences during childhood and adolescence (ages 0–17). Several composites were included in the data analyses for this study, including caretaker neglect (k = 18, Cronbach's α = .92), caretaker abuse (k = 30, α = .92), and witnessing violence (k = 9, α = .84).

Structured clinical interview for DSM-IV axis I (SCID-I): The SCID-I (First et al., 1996) is a structured interview assessing DSM-IV Axis I disorders. Baseline depression and substance use disorder were used as dependent variables in this study.

2.3. Analyses

Scales representing AGG and RB were created based on independent item content analyses of the DIPD-IV and SNAP conduct and antisocial personality disorder criteria by C.J.H and S.A.B. Agreement of these ratings was high (κ = 0.92), and disagreements were resolved by mutual discussion. Scales were created by summing endorsed items for each scale. Table 1 shows the DSM-IV (i.e., DIPD-IV interview) items chosen for each scale. Sample SNAP items include "At times I've done some petty thievery" (RB; 18

Table 1
Conduct and antisocial personality disorder items representing rule-breaking and aggression

Rule-breaking	Aggression
C8: Set fires	C1: Bullied others
C10: Burglarized	C2: Initiated physical fights
C11: Lied	C3: Used a weapon in a fight
C12: Stole without confronting victim	C4: Was cruel to people
C13: Stayed out late	C5: Was cruel to animals
C14: Ran away	C6: Stole while confronting the victim
C15: Truancy	C7: Forced sexual activity
A1: Unlawful behavior	C9: Destroyed property
A2: Lying	A4: Physical fighting
A5: Disregard safety of self/others	
A6: Irresponsibility with jobs or money	

Note. C represents conduct disorder criteria and A represents antisocial personality disorder criteria; both are followed by the DSM-IV criterion number. SNAP item numbers are available from the authors upon request.

items total) and "I've gotten into more fights than most people" (AGG; 6 items total). The internal consistency and descriptive statistics for resulting scales were analyzed and the scales were inter-correlated and also correlated with trait, personality disorder, and functioning scores. Logistic regression models were used to predict the presence vs. absence of dichotomous variables including concurrent major depression, historical substance use, childhood abuse, neglect, witnessing of violence, and prospective arrests and suicide gestures. All of these analyses were conducted for both interview and self-report derived AGG and RB.

Because of the correlation between AGG and RB, efforts were made to demonstrate the unique relation between each of these constructs and validating measures. For correlational analyses, both univariate correlations and partial correlations correcting for the other construct (e.g., AGG in analyses of RB-validator relations) were computed. For logistic regression analyses, AGG and RB were simultaneously entered as predictor variables.

To test the generalizability of effects across genders, moderation analyses were conducted for all effects. Between-samples tests of correlations were used to test for differences in internal consistencies across genders. For correlational analyses, AGG or RB, gender, and their interaction were entered into regression analyses predicting each validating variable. For logistic regression analyses, gender and interactions between AGG and gender and RB and gender were entered.

3. Results

The internal consistency coefficients, descriptive data, and inter-correlations for interview and self-report derived AGG and RB are given in Table 2. Scale reliability was acceptable, with Cronbach's alphas for all but the briefest scale exceeding 0.70. Descriptive statistics suggested that these variables were somewhat

Table 2
Reliability coefficients, descriptive statistics, and inter-correlations for rule-breaking and aggression measured by interview and self-report

	k	Mean	SD	Interview		Self-report	
				RB	AGG	RB	AGG
Interview RB	11	1.61	2.31	0.80	–	0.57	0.10
Interview AGG	9	0.57	1.29	0.70	0.77	0.03	0.38
Self-report RB	18	5.39	4.06	0.70	0.51	0.83	–
Self-report AGG	6	0.99	1.33	0.45	0.55	0.54	0.65

Note. k = number of items. SD = standard deviation. Cronbach's alphas are on the diagonal. Coefficients below the diagonal represent zero-order correlations; partial correlations (same method, different construct controlled as measure on the row) are above diagonal. Neither alpha nor inter-correlations were moderated by gender.

positively skewed, as expected given that the relatively low base rate of aggressive and rule-breaking behavior in this clinical sample.[1] Inter-correlations suggested the validity of the measures, as convergent correlations (e.g., interview and self-report RB) were higher than divergent correlations (e.g., interview RB and self-report AGG) (0.55–0.70 and 0.45–0.51, respectively). Nevertheless, the within-methods correlations were substantial, consistent with previous evidence of these constructs' relatedness. Removing method variance reduced the divergent validity of the constructs considerably (0.03–0.10), whereas convergent correlations remained sizeable (0.38–0.57), as shown by the partial coefficients above the diagonal in Table 2. As expected, both constructs, measured both ways, were significantly more common in men than women ($p < 001$). Age was not significantly related to either construct. Individuals with minority status had significantly higher levels of AGG measured both ways ($p < 01$) but there were no ethnic differences on RB.

AGG and RB were next correlated with validating variables representing personality traits and disorders. To correct for the overlap between AGG and RB, partial correlations were computed. Results are depicted in Table 3. Within the personality domain, results were quite consistent across interview and self-report AGG and RB. Both traits were strongly negatively related to agreeableness, and RB was negatively related to conscientiousness. By contrast, the unique association of conscientiousness with AGG was positive (if weak and inconsistently significant) across both measurement methods.

Contrary to expectations, AGG was not uniquely related to neuroticism. Exploratory correlations were computed to test the hypothesis that AGG was differentially related to facets of neuroticism. Indeed, by interview and self-report AGG was positively related to hostility (interview $r = 0.22$, partial $r = 0.13$; self-report $r = 0.38$, partial $r = 0.26$) and inversely related to self-consciousness (interview $r = -0.06$, partial $r = -0.06$; self-report $r = -0.05$, partial $r = -0.10$) (see Tables 4 and 5).

Within the personality disorders domain, results were again mostly consistent across measurement methods. RB was uniquely and positively related to cluster B personality disorders. As with conscientiousness, RB and AGG appeared differentially related to obsessive–compulsive personality disorder, with AGG positively and RB negatively related.

Finally, RB showed the most consistent relations to past, present, and future outcome variables, and results were again consistent across measurement methods. AGG did not increment RB in predicting any of these phenomena, whereas RB was significant in predicting all but depression. These findings are consistent with hypotheses regarding childhood experiences, substance use disorders, and arrests, but contradict hypothesized relations of AGG with depression and suicidal behavior. With regard to functioning, both AGG and RB were related to social, work, and recreational dysfunction, although only RB remained significant when the other construct was controlled.

4. Discussion

Results from the current study extend previous research on AGG and RB as separable components of ASB, and expand the nomological net in which these constructs are embedded. AGG and RB can be reliably and validly measured using both interview and self-report measures of conduct and antisocial personality disorders in an adult, mixed-gender, clinical sample. Indeed, relations were remarkably similar across measurement methods. In this

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[1] Analyses were re-run with square root transformed variables to correct for skewed distributions, and did not change the substantive results. As such, all analyses reported are with untransformed variables.

Table 3
Relations of rule-breaking and aggression with FFM traits and personality disorders

	Rule-breaking		Aggression	
	r	Partial r	r	Partial r
Interview				
Neuroticism	0.10	0.09	0.04	−0.04
Extroversion	0.01	−0.01	0.02	0.02
Openness to experience	−0.08	−0.01	−0.10	−0.06
Agreeableness	−0.29[*]	−0.11[*]	−0.30[*]	−0.15[*]
Conscientiousness	−0.19[*]	−0.22[*]	−0.05	0.12[*]
Schizoid	0.15[*]	0.06	0.16[*]	0.07
Schizotypal	0.24[*]	0.10	0.23[*]	0.10
Paranoid	0.23[*]	0.11[*]	0.23[a,*]	0.09
Borderline	0.36[*]	0.24[*]	0.28[*]	0.04
Histrionic	0.24[a,*]	0.18[*]	0.15[*]	−0.05
Narcissistic	0.24[*]	0.16[*]	0.18[*]	0.03
Avoidant	0.12[*]	0.12[*]	0.05	−0.06
Dependent	0.09[a]	0.06	0.06	0.02
Obsessive–compulsive	−0.02	−0.10	0.07[a]	0.11[*]
Self-report				
Neuroticism	0.20[*]	0.16[*]	0.13[*]	0.02
Extroversion	0.00	0.00	−0.01	−0.02
Openness to experience	−0.05	0.02	−0.13[*]	−0.11[*]
Agreeableness	−0.41[*]	−0.23[*]	−0.45[*]	−0.29[*]
Conscientiousness	−0.33[*]	−0.31[*]	−0.13[*]	0.06
Schizoid	0.13[*]	0.04	0.19[a,*]	0.13[*]
Schizotypal	0.25[*]	0.13[*]	0.28[*]	0.18[*]
Paranoid	0.24[*]	0.10	0.29[*]	0.20[*]
Borderline	0.35[a,*]	0.25[*]	0.27[*]	0.10
Histrionic	0.18[a,*]	0.14[*]	0.11[*]	0.00
Narcissistic	0.20[a,*]	0.15[*]	0.15[*]	0.05
Avoidant	0.09	0.09	0.04	−0.02
Dependent	0.07	0.09	−0.01	−0.07
Obsessive–compulsive	−0.06 [a]	−0.11[*]	0.06	0.10

[a] Relation stronger for women.
[*] p < 0.01.

Table 4
Logistic regression analyses using DIPD and SNAP RB and AGG to predict behavioral variables

	N	χ^2	R^2	Predictor	B (SE)
Interview					
Childhood	664				
Abuse	450	30.12[**]	0.06	Rule-breaking[a]	0.20 (0.06)
Neglect	451	19.03[**]	0.04	Rule-breaking	0.14 (0.06)
Witness violence	432	24.75[**]	0.05	Rule-breaking	0.22 (0.06)
Baseline	733				
SUD	147	55.09[**]	0.11	Rule-Breaking	0.33 (0.05)
Depression	484	0.88		neither	
Prospective	662				
Suicidal behavior	113	11.21[*]	0.03	Rule-breaking	0.12 (0.05)
Arrest	70	47.54[**]	0.14	Rule-breaking	0.33 (0.06)
Self-report					
Childhood	664				
Abuse	450	17.92[**]	0.04	Rule-breaking	0.08 (0.03)
Neglect	451	16.53[**]	0.03	Rule-breaking	0.09 (0.03)
Witness violence	432	9.33[*]	0.02	neither	
Baseline	733				
SUD	147	61.88[**]	0.13	Rule-breaking	0.18 (0.03)
Depression	484	2.43		neither	
Prospective	662				
Suicidal behavior	113	13.18[**]	0.03	Rule-breaking	0.09 (0.03)
Arrest	70	58.33[**]	0.17	Rule-breaking	0.17 (0.04)

Note. significant effects: [**] p < 0.001, [*] p < 0.01. Historical suicide behavior rated retrospectively at baseline. SUD and depression diagnoses made with SCID-I at baseline. Predictors considered significant if Wald test p < 0.05.
[a] Relation stronger for women.

sample, both AGG and RB were moderately to strongly relate to disagreeableness. RB was uniquely related to a wider range of vari-

Table 5
Correlations of rule-breaking and aggression with functioning scores

Functional domain	Rule-breaking		Aggression	
	r	Partial r	r	Partial r
Interview				
Social	−0.21	−0.15	−0.14	0.00
Work	−0.14	−0.14	−0.06	0.04
Recreational	−0.14	−0.11	−0.09	−0.02
Self-report				
Social	−0.23	−0.16	−0.17	−0.06
Work	−0.17	−0.15	−0.08	0.01
Recreational	−0.17	−0.11	−0.14	−0.06

Note. None of these effects were moderated by gender.

ables than AGG; these variables included cluster B personality disorders, dysfunction, troubled childhood experiences, substance use disorders, prospective arrests, and suicide gestures. These findings were consistent with predictions for all outcome variables except social dysfunction and suicide gestures. Data that did not support hypotheses with regard to AGG may be explained by the influence of disinhibition, a trait uniquely related to RB, on these outcomes.

Another factor that may explain null results with regard to AGG was that it was unexpectedly unrelated to neuroticism. These results differ from those in several studies examining normative male adolescents (e.g., Burt and Donnellan, 2008). Such differences may reflect differences in functioning and overall level of psychopathology across normative adolescent and clinical samples (though it is noteworthy that disinhibition appears to be related to RB across both sample types). Importantly, however, follow-up analyses suggested that AGG was related to the hostility facet and negatively related to the self-consciousness facet of this trait, suggesting that the current findings are somewhat consistent with those of prior work. Moreover, a similar hypothesis has been put forth with regards to neuroticism and psychopathy to explain inconsistent findings in the literature (e.g., Lynam and Gudonis, 2005; Lynam and Widiger, 2007).

Conscientiousness and obsessive–compulsive personality disorder had differential relations to these constructs, in that they were negatively related to RB and positively, though weakly, related to AGG when RB was controlled. This highlights the utility of differentiating AGG and RB, as previous researchers comparing the broader construct of psychopathy to conscientiousness and obsessive–compulsive personality disorder have reported a negative relationship (e.g., Lynam and Widiger, 2007; McGlashan et al., 2000). Also, this suggests that conscientiousness may represent a protective factor for depression, suicidal behavior, and interpersonal dysfunction among individuals with RB tendencies.

These findings extend previous research on AGG and RB as separable and clinically meaningful elements of ASB. They also place AGG and RB in the context of related constructs more commonly investigated in adult clinical samples, such as psychopathy and antisocial personality disorder. Psychopathy is a personality style whereas antisocial personality disorder is a psychiatric disorder, though these constructs are strongly related to one another (e.g., Frick et al., 2000). Psychopathy also predicts ASB more generally, even when items involving specific ASB behaviors are removed from measures of the construct (Kosson et al., 2002; Larsson et al., 2007). Importantly, both psychopathy and antisocial personality disorder are negatively related to FFM traits agreeableness and conscientiousness (Lynam and Widiger, 2007; Lynam et al., 2005). Further, some research suggests that psychopathy is positively related to neuroticism although, as noted, findings have been inconsistent (e.g., Lynam, 2002; Salekin et al., 2005). The current results both broaden these findings to AGG and RB and suggest that the associations vary across the two ASB dimensions, highlighting

the potential utility of differentiating AGG and RB in the description of psychopathy, antisocial personality disorder, and other adult clinical constructs that are associated with ASB. Notably, AGG and RB may also systematically relate to differentiable factors of psychopathy (e.g., Lilienfeld and Andrews, 1996), suggesting the need to explore this possibility empirically.

Building on the above point, future research should specifically examine how AGG and RB are differentially related to psychopathy and to the association between psychopathy and ASB, both descriptively and etiologically. For example, AGG and RB may help clarify the different pathways of "successful" as opposed to criminal psychopaths (Christie, 1970; Hare, 1993; Lykken, 1995; McHoskey et al., 1998), such that RB is unique to the latter group. Alternatively, prior work has suggested that psychopathy is influenced primarily by genetic factors, whereas ASB (at least in adulthood) is influenced by both genetic factors and the non-shared environment (Burt and Larson, 2007; Enns et al., 2002; Larsson et al., 2007; Silberg et al., 2007). Given that AGG and RB also have different etiologies (at least in childhood and adolescence), differential associations with these constructs may be partially driving the etiological differences between psychopathy and ASB. Future research should explore both of these hypotheses.

The need to sample longitudinal data spanning childhood and adulthood to effectively sample the correlates of AGG and RB over time remains important. Theoretical models have been developed and extended from children to adults, such as in the current study, and from adults to children (e.g., Lynam and Gudonis, 2005); longitudinal research will likely further integrate these perspectives. Similarly, further identification of genetic, epigenetic, environmental, and shared/interactional causes of ASB and related constructs over the lifespan remains an important area for continued research. For example, the finding that self-reported AGG relates to Cluster A personality disorder features when controlling for RB is interesting, may help delineate etiological factors for both AGG and Cluster A features, and should be followed up with further research.

Several limitations particular to the current study also suggest the need for further investigation. For example, in the current data, multiple disorders were sampled in a group of largely treatment-seeking individuals. The CLPS sample is well-suited for studying RB and AGG in that variability with regard to these constructs was sufficient to yield meaningful results, but the sample also included a large number of people with other clinical issues, providing meaningful tests of their relations to a host of other constructs. Nevertheless, somewhat low variances on AGG and RB in this sample suggest that results might differ in samples with higher proportions of individuals prone to ASB, and similar studies in such samples are needed. Studies with participants from non-clinical and non-forensic samples, though difficult to obtain, would be particularly useful given previous speculations regarding personality differences between individuals who manifest successful vs. unsuccessful ASB (Lynam and Widiger, 2007), and the potential for sample characteristics to moderate observed results. Finally, further research on the use of AGG and RB in adults using multiple measurement approaches is needed for the purposes of replication and extension of current findings.

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Conflict of interest

No author on this paper has a financial conflict of interest related to its results.

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C.J. Hopwood et al./Journal of Psychiatric Research 43 (2009) 803–808

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