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Personality Correlates of Self-injury in Adolescent Girls: Disentangling the Effects of Lifetime Psychopathology

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Adolescent non-suicidal self-injury (aNSSI), or the intentional destruction or mutilation of body tissue without suicidal intent (APA, 2013; Nock, 2010), is a common mental health problem facing youth. The health consequences associated with aNSSI are diverse and significant, including severe injuries, medical complications (i.e., infections) and accidental mortality (Briere & Gil, 1998; Klonsky, 2009). Lifetime rates of aNSSI vary based on sampling and methods (Swannell, Martin, Page, Hasking, & St John, 2014), but between 14%–45% of community-dwelling youth are believed to engage in NSSI at least once (Hankin & Abela, 2011; Jacobson & Gould, 2007; Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007; Plener & Muehlenkamp, 2007), and rates are reportedly higher in treatment-seeking youth (Asarnow et al., 2011).

One strategy to understand the aNSSI phenomenon is to consider contributions of personality. Personality traits are arranged hierarchically with the most studied level of the hierarchy consisting of five general traits: neuroticism (i.e., stress reactive, prone to negative affect), extraversion (i.e., sociable, prone to positive affect), conscientiousness (i.e., self-controlled, detail oriented), agreeableness (cooperative, trusting), and openness to experiences (interested in new things, intellectual). Several studies indicate that persons who self-injure differ from persons without history of self-injury by high neuroticism and openness and low conscientiousness, agreeableness and extraversion according to the higher-order Big 5 traits (Brown, 2009; Goldstein, Flett, Wekerle, & Wall, 2009; MacLaren & Best, 2010; Mullins-Sweatt, Lengel, & Grant, 2013). The vast majority of these studies did not consider lower-order facets--the narrower, more homogenous traits that underlie the higher-order Big 5 traits (Watson, Nus, & Wu, 2017). Facets complement higher-order traits by providing more specific information regarding core affective, cognitive, and behavioral propensities. For instance, the facets underlying neuroticism include melancholia, anxiousness, and hostility, which reflect tendencies to report feeling down/overwhelmed, anxious, and hostile/irritable, respectively. A person (or group) predominantly high on facet anxiousness and another person (or group) predominantly high on facet melancholia can

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have similar scores on neuroticism despite very different presentation. That aNSSI has been linked to high neuroticism does not specify which neuroticism facets are most relevant to understanding self-injury. Indeed, facets have shown differential patterns of association and incremental validity with mood and anxiety disorders, especially facets in the neuroticism and extraversion domains (Bienvenu et al., 2004; Gamez, Watson, & Doebbeling, 2007; Lubke, Ouwers, de Moor, Trull, & Boomsma, 2015; Naragon-Gainey & Watson, 2014; Naragon-Gainey, Watson, & Markon, 2009; Rector, Bagby, Huta, & Ayearst, 2012; Uliaszek et al., 2009; Watson, Stasik, Ellickson-Larew, & Stanton, 2015). In contrast to the more heterogeneous higher order traits, each facet emphasizes a particular dimension of clinically relevant individual differences. The distinctions among the content described by facets (i.e., anxiousness vs melancholia for neuroticism; sociability vs positive temperament for extraversion, etc.) can inform etiologic models of aNSSI and generate novel hypotheses about underlying mechanisms. Furthermore, facets that exhibit large magnitude associations with aNSSI may help improve assessment over the use of Big 5 traits.

To our knowledge, there have only been two facet-level studies of NSSI in college students (MacLaren & Best, 2010; Mullins-Sweatt et al., 2013) and no facet-level studies of aNSSI. The study by Mullins-Sweatt et al. (2013) linked NSSI (compared to non-NSSI) to high levels of all assessed neuroticism facets, low levels of all assessed conscientiousness facets, high levels of one agreeableness facet (modesty), low levels of some agreeableness facets (compliance and trust), high levels of some openness to experience facets (aesthetics, feelings, and values), and low levels of one extraversion facet (assertiveness). The study by MacLaren & Best (2010) compared high (10 or more incidents or 3 or more different types) and low levels of NSSI (less frequent and less diverse types) to non-NSSI and identified high levels of some of neuroticism facets (depressivity, high self-consciousness and high vulnerability), low levels of some conscientiousness facets (self-discipline, deliberation, dutifulness), low levels of some agreeableness facets (trust, straightforwardness, and altruism), high levels of one openness to experience facet (feelings), and low levels of one extraversion facet (assertiveness). Both studies observed that the high depressivity facet of neuroticism (also referred to as melancholia in some systems) exhibited the largest magnitude of association with NSSI among all facets examined. However, it remains unclear if this personality profile extends to cohorts younger than college-aged.

It is also noteworthy that the personality profiles of common psychopathologies, such as Major Depressive Disorder (MDD) and Dysthymia (Kotov, Gamez, Schmidt, & Watson, 2010), are strikingly similar to the personality profile associated with aNSSI (e.g., high neuroticism, low extraversion, and low conscientiousness). Lifetime psychiatric history is associated with increased risk for aNSSI, but prior personality studies of NSSI have not focused on disentangling the impact of psychiatric history on the personality profile associated with aNSSI. Thus, these personality correlates of NSSI may reflect non-specific correlates of both NSSI and psychiatric illness or spurious correlates better accounted for by psychiatric illness. For instance, in some NSSI-personality studies, psychopathology was ubiquitous by design, such as when recruiting from adolescent inpatient units (Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006) or from a depression treatment study (Wilkinson, Kelvin, Roberts, Dubicka, & Goodyer, 2011). Other NSSI-personality studies recruited from the community or college campuses and either did not assess

psychopathology (Mullins-Sweatt et al., 2013) or assessed depression (Hankin & Abela, 2011). The depressive disorders MDD and Dysthymia represent especially potent diagnostic confounds in studies aiming to demarcate a personality profile of aNSSI due to especially high rates of co-occurrence with aNSSI (Wilkinson et al., 2011), as well as high levels of neuroticism and low levels of conscientiousness (Kotov et al., 2010). Other common psychopathologies, such as anxiety disorders, are also potential confounds because of high rates of aNSSI (Bentley, Cassiello-Robbins, Vittorio, Sauer-Zavala, & Barlow, 2015) and high levels of neuroticism (Kotov et al., 2010).

The goal of the present study is to identify higher order and facet-level personality traits that index history of aNSSI in a community sample with a mixed history of psychiatric illness, including many cases without lifetime history of psychopathology. To accomplish this goal, we examine data collected from a sample of 550 community-dwelling, never-depressed 13-15 year-old girls. Lifetime history of depression, a closely linked diagnostic correlate of aNSSI (Wilkinson et al., 2011) and potential confound, was an exclusion criterion for enrollment into the cohort. Thus, the impact of lifetime MDD and Dysthymia on personality traits were minimized via careful screening. Then, other psychopathologies, such as anxiety disorders, that impact personality traits and increase risk for aNSSI were controlled for statistically. This research has the potential to advance etiological or translational models of aNSSI by discriminating personality correlates of aNSSI at the facet level from that of co-occurring psychiatric illness, identifying traits that may help screening efforts in settings where aNSSI and psychiatric illness are both common (i.e., treatment-seeking settings), and identifying targets for intervention and prevention.

Methods

Data were collected as part of the Adolescent Development of Emotions and Personality Traits (ADEPT) Project at Stony Brook University, an ongoing prospective longitudinal study. ADEPT recruited adolescent girls who were between 13 and 15 years of age, English speaking, and had a biological parent willing to participate in the study. Participants were recruited from commercial mailing lists, as well as word of mouth, school presentations, community websites, and flyers. Mean age at baseline was 14 years and 5 months (standard deviation (SD): 7 months), and 80% were Caucasian.

The primary aim of ADEPT is to elucidate mechanisms pertaining to first onset of MDD and Dysthymia in adolescent girls. Hence, the cohort was recruited to be between 13-15 years-old in order to maximize the number of first onset cases during prospective follow-up while excluding relatively few girls for already having experienced a first onset DSM-IV Major Depressive Episode (MDE) or Dysthymia. Based on epidemiological rates (Lewinsohn, Rohde, & Seeley, 1998), this likely excluded about 1%-2% of the population of 13 year-olds and about 3%-7% of the population of 15 year-olds. Otherwise, few specific exclusion criteria were employed--adolescents had to live within an hour from Stony Brook University, be judged capable of providing assent, and not be hindered by cognitive/physical handicaps that would interfere with study procedures (e.g., filling out questionnaires, viewing a computer screen, or participating in a diagnostic interview). The adolescent provided written

assent and a biological parent provided written consent. All research was approved by the Institutional review board of Stony Brook University.

Measures

During the initial intake visit, the participating biological parent provided demographic and background information: maternal age, paternal age, proband age, race, ethnicity, whether both parents lived in the home with the child, household income, and parental education.

NSSI assessment—NSSI was assessed by trained interviewers using a structured interview format of the Inventory of Statements About Self-Injury (Klonsky & Glenn, 2009). Interviewers began by asking about the occurrence (Y/N) and frequency of 13 common forms of NSSI (e.g., cutting, scratching, etc.), and then followed-up positive responses with open-ended probes to assure that the behavior was indeed NSSI (i.e., intentional, not an attempt at suicide).

More details about patterns, type, and frequency of aNSSI in this cohort has been published elsewhere (Gromatsky et al., 2017). Briefly, 43/550 (7.82%) reported having engaged in aNSSI behaviors. The most common form of aNSSI was cutting ($n = 23$) and the vast majority reported two or more episodes of self-injury ($31/41 = 75.6\%$), with frequency information unclear for 2 cases. We retained all 43 cases for the aNSSI group to enhance statistical power and because prior studies of young adolescents failed to detect evidence of a difference between single episode aNSSI and 2+ instances of aNSSI on key risk factors (Gromatsky et al., 2017).

Psychopathology—Adolescents were assessed for DSM-IV psychopathology using the Schedule for Affective Disorders and Schizophrenia for school-age children-present and lifetime version (K-SADS-PL; Kaufman et al., 1997) by trained interviewers under the supervision of three clinical psychologists (names redacted for review). Diagnoses were derived as the more severe diagnostic rating from the last month and prior to last month intervals. Given interest in the link between anxiety disorders and self-injury presented in the literature, including meta-analysis (Bentley et al., 2015), the four most common anxiety disorders were reported individually: Specific Phobia/Agoraphobia ($n = 74$), Social Phobia ($n = 57$), Generalized Anxiety Disorder ($n = 20$), and Separation Anxiety ($n = 18$). These four were also collapsed with rarer disorders (Panic Disorder ($n = 3$), Obsessive Compulsive Disorder ($n = 9$), and Posttraumatic Stress Disorder ($n = 0$)) to create the composite “Any DSM-IV Anxiety Disorder”. “Any DSM-IV Behavioral Disorder” was calculated from Attention Deficit Hyperactivity Disorder ($n = 19$), Oppositional Defiant Disorder ($n = 16$), and Conduct Disorder ($n = 2$). No participant met criteria for Anorexia Nervosa, Bulimia Nervosa, or Binge Eating Disorder. Any DSM-IV Diagnosis was calculated from Any DSM-IV Anxiety Disorder, Any DSM-IV Behavioral Disorder, and one case of a Substance Use Disorder. DSM-IV rules for differential diagnosis were followed. For convenience, we abbreviate the “Any DSM-IV Diagnosis” group as “DX” in the results section.

There were no cases of a Bipolar Disorder, Autistic Disorder, or Mental Retardation, and no symptoms of a delusion or hallucination. During screening and enrollment, girls were

judged cognitively capable of completing the study (complete self-report, complete interview, etc.) based on discussion between the biological parent and staff psychologists.

Personality Assessment—The self-report personality battery included five general personality traits assessed by the Big Five Inventory (John & Srivastava, 1999), plus the best-established facets of neuroticism (melancholia, anxiousness), conscientiousness (self-discipline, dutifulness, deliberateness, achievement striving, orderliness), and extraversion (positive temperament, assertiveness, sociability, venturesomeness) from the Faceted Inventory of the Five-Factor Model (FI-FFM; Watson, Nus, & Wu, 2017). Hostility, a facet of neuroticism, was assessed using the hostility subscale from the Buss-Perry Aggression Questionnaire (Buss & Perry, 1992).

Of note, a few items exhibited poor psychometric properties (very low correlation with overall scale total; high rates of missing response), perhaps due to the young age of the sample (e.g., reading comprehension). This includes 2 items from BFI Extraversion (“Is reserved”, “Has an assertive personality”), 1 item from BFI Openness to Experience (“Prefers work that is routine”), and 1 item from the FI-FFM Deliberateness scale (“I am spontaneous”). These items were not included when computing their respective scales.

Analytic strategy—Descriptive analyses of association between aNSSI and demographic/psychiatric variables were conducted using Chi-Square for categorical variables (i.e., parental education) and independent samples T-tests for continuous variables (i.e., age). Analyses to identify personality correlates of aNSSI while controlling for psychiatric history were examined using MANCOVAs in which the independent variables were NSSI (Y/N), DX (Y/N), their interaction, and two covariates (age, parental education). In total, four MANCOVAs were conducted. The first was conducted with the 5 higher-order BFI traits. Then, separate MANOVAs were conducted for each of the three facet domains—neuroticism, conscientiousness, and extraversion. We report the results of the univariate ANCOVAs as well, but did not interpret univariate effects if the MANOVA term did not reach statistical significance. Effect sizes (partial eta squared (η^2); Sum of Square Effect/Total Sums of Squares) and level of significance are presented for the type III sums of squares model.

We then sought to identify a set of unique and efficient personality correlates of aNSSI using logistic regression (aNSSI vs non-aNSSI). This model included DX, age, parental education, and personality traits that were significantly associated with aNSSI per results of the MANOVAs. Backwards elimination was utilized to yield an efficient solution and minimize multicollinearity.

Results

Table 1 presents the demographic and descriptive information about the NSSI group and non-NSSI group. The groups were similar on age, maternal age, paternal age, race, Hispanic ethnicity, two parent household, and parental education. The groups differed in rates of lifetime diagnoses. For nearly every disorder, rates of diagnosis were higher in the aNSSI group compared to non-aNSSI group. The exception to the overall pattern was Separation

Anxiety Disorder, which was less common in aNSSI. Odds of DX was 2.74 times higher in aNSSI ($21/43 = 48.8\%$) than non-aNSSI ($131/507 = 25.8\%$). The odds of meeting criteria for at least 2 DSM-IV disorders was over 7 times higher in aNSSI than non-NSSI, indicating a strong link between aNSSI and diagnostic comorbidity. This demonstrates that aNSSI is strongly associated with diverse forms and numbers of lifetime psychiatric disorders.

Self-Report Personality

Table 2 displays the means and standard deviations for each personality trait based on aNSSI and DX. The overall MANOVA for higher order traits was significant for aNSSI (Pillai = 0.08, $F(5,533) = 9.87$, $p < 0.01$) and DX (Pillai = 0.04, $F(3,533) = 4.10$, $p < 0.01$), but not for the interaction (Pillai = 0.01, $F(3,533) = 0.72$, $p = 0.60$). High neuroticism and low conscientiousness characterized aNSSI and DX. Two previously reported correlates of aNSSI--low extraversion and low agreeableness--characterized DX but not aNSSI. High openness characterized aNSSI but not DX.

The overall MANOVA for neuroticism facets was significant for aNSSI (Pillai = 0.07, $F(3,529) = 15.32$, $p < 0.01$) and DX (Pillai = 0.03, $F(3,529) = 4.59$, $p < 0.01$), but not for the interaction (Pillai = 0.01, $F(3,529) = 1.56$, $p = 0.20$). Of the facets, high melancholia showed the strongest discrimination of aNSSI (e.g., largest effect size) and was not associated with DX. High anxiousness and hostility were related to aNSSI as well as DX.

The overall MANOVA for extraversion facets was significant for DX (Pillai = 0.02, $F(4,527) = 2.94$, $p = 0.02$), but not for aNSSI (Pillai = 0.01, $F(4,537) = 15.32$, $p = 0.10$) or the interaction (Pillai = 0.005, $F(4,537) = 0.04$, $p = 0.97$).

The overall MANOVA for conscientiousness facets was significant for aNSSI (Pillai = 0.05, $F(5,528) = 5.53$, $p < 0.01$) and DX (Pillai = 0.03, $F(5,528) = 3.31$, $p < 0.01$), but not the interaction (Pillai = 0.01, $F(5,528) = 1.70$, $p < 0.13$). Of the five conscientiousness facets, low self-discipline and dutifulness characterized aNSSI and DX, low deliberateness and orderliness characterized aNSSI but not DX, and low achievement striving characterized DX not aNSSI.

We next conducted a logistic regression (NSSI Y/N) with age, parental education, DX, and the 10 personality traits that were significantly associated with aNSSI per multivariate analyses (see Table 2). As shown in Table 3, backwards elimination resulted in a final model that included conscientiousness ($p < 0.01$, Odds Ratio = 0.30, 95% CI: 0.15 – 0.61), melancholia ($p < 0.01$, Odds Ratio = 2.92, 95% CI: 1.88 – 4.52), and openness to experience ($p = 0.02$, Odds Ratio = 2.26, 95% CI: 1.16 – 4.42) as predictors of aNSSI while controlling for other variables in the model. Lifetime diagnostic history was not significantly associated with aNSSI while controlling for the effect of the three personality traits.

Discussion

This study examined higher order Big 5 and facet level personality correlates of self-injury in 550 never-depressed 13-15 year-old adolescent girls. This community-dwelling cohort was recruited based on absence of lifetime history of MDD and Dysthymia (two disorders

that may have driven results of past aNSSI studies of personality). Moreover, the cohort was assessed for psychiatric history and aNSSI using in-person diagnostic interviews and for personality traits using well-validated instruments. This is the first study to our knowledge to examine the facet-level profile of adolescent self-injury (previous studies were college age) and to consider thoroughly the impact of psychiatric history on personality.

Our first main result was that several higher order and facet level traits discriminated groups defined by presence or absence of history of self-injury. This included all 3 facets from the neuroticism domain, 4 of 5 facets from the conscientiousness domain, and none of the 4 facets from the extraversion domain. Our second main result was that aNSSI may be partly understood in terms of and discriminated by just 3 additive traits—high melancholia from the neuroticism domain (facet trait), low conscientiousness (higher order trait and most facets), and high openness to experience (higher order trait). This contrasts with the picture of aNSSI as associated with non-specific personality trait disturbance across domains and within-domains.

Aspects of these results replicate personality studies of aNSSI in older populations. For instance, high levels of neuroticism, low conscientiousness, and high openness to experience were associated with NSSI in adult studies that did not control for lifetime psychiatric history or exclude lifetime history of MDD and Dysthymia. Additionally, our results replicate the two personality facet studies of self-injury in college students, especially the robust association with the melancholia facet of neuroticism (Mullins-Sweatt et al., 2013). Thus, the content described by this trait (tendency to feel down and overwhelmed) may be a particularly relevant aspect of neuroticism for understanding self-injury. Of note, the FI-FFM melancholia scale includes items measuring emotional lability, pessimism, isolation, self-worth, proneness to sadness, and low positive emotionality. This content does not reference self-injury or para-suicidal behavior, but instead appears to describe a focal aspect of the affective, cognitive, and behavioral tendencies of girls who self-injure. Furthermore, while the scale includes items that capture chronically low mood and worthlessness, it does not include other symptoms of depressive disorders (e.g., vegetative symptoms, concentration difficulties, and suicidal ideation) or other essential criteria (e.g., prominence of symptoms, episodic course, and functional impairment). Thus, the melancholia trait is conceptually (and statistically) connected to depressive disorders and NSSI, but is clearly distinct in its content and time-frame, especially as it measures lifelong patterns. Thus, our study contributes to this literature on NSSI by demonstrating that high trait melancholia emerge in connection to self-injury as early as 13-15 years of age.

On the other hand, our results also support the conjecture that unmeasured psychiatric history may have influenced aspects of the results of past NSSI studies. For instance, some previously reported characteristics of youth who self-injure appear to track psychiatric history and not self-injury per se (while controlling for each other): low extraversion and facets (assertiveness, venturesomeness), low achievement striving, and low agreeableness. It appears that these traits are better accounted for by psychiatric history, which is common in youth and adults who endorse history of self-injury. Other traits were observed to track both aNSSI and psychiatric history (while controlling for each other)—high neuroticism and its facets of anxiousness and hostility, facets of conscientiousness (low self-discipline,

dutifulness), and low sociability (a facet of extraversion, although the extraversion facet MANOVA was not significant).

These findings can help update and clarify etiologic models of aNSSI. First, theorists posit that aNSSI serves as an adaptation to distress (Nock & Mendes, 2008), and our findings point to melancholia as a potent underlying mechanism, much more so than anxiousness or hostility. It may be that high levels of melancholia especially accentuate risk for aNSSI in the context of other risk factors, such as poor coping strategies or social isolation. Second, theorists posit that social isolation or difficulty communicating distress, especially with caregivers, promotes aNSSI in the context of distress (Nock, 2009). The personality trait closest to this concept is sociability, the facet of extraversion that captures need for affiliation and emotional reciprocity with others. However, we did not observe a robust association between low sociability and aNSSI, suggesting that high levels of interpersonal conflict or low social support are necessary to explain connection between aNSSI and social isolation. Consistent with this idea, several studies have linked risk for aNSSI to aversive parental behavior (a salient source of support for 13-15 year-olds), such as expressed emotion (Wedig & Nock, 2007) and maladaptive parenting styles (Baetens et al., 2014, 2015; Bureau et al., 2010). Third, our results support the hypothesis that aNSSI involves a self-control-based risk pathway (e.g., low conscientiousness; Fikke, Melinder, & Landro, 2011) separate from a negative affect-based risk pathway (e.g., high melancholia; Klonsky, 2007). This aligns with the findings from a previous study of familial trait transmission (Gromatsky et al., 2017). Specifically, Gromatsky et al. (2017) found that disinhibitory traits in parents statistically mediated the link between disinhibitory traits and self-injury in girls, whereas lack of support from parents statistically mediated the link between high neuroticism and self-injury in girls. Our results expand this conceptualization by adding Openness to Experience as a third independent pathway that increases risk for aNSSI. In college students, the facet of Openness to Experience with the strongest connection to self-injury was high levels of Feelings (MacLaren & Best, 2010; Mullins-Sweatt et al., 2013), a tendency to experience intense emotions or be absorbed by intense emotional experience. High levels of perceptual/emotional aspects of Openness to Experience is speculated to disrupt one's sense of self and/or reality (DeYoung, Grazioplene, & Peterson, 2012), and this may theoretically increase the likelihood of self-injury. Clinical and translational models of aNSSI may improve assessment, conceptualization, and treatment of self-injury by targeting internal (personality) and external (social network; parenting) risk pathways. Moreover, models of aNSSI may also benefit from conceptualizing the phenomena within the context of intact capacity for pleasure and happiness (extraversion and facets) and motivation to succeed (achievement striving, a facet of conscientiousness).

There are several limitations to this study. First, the community sample was recruited to be exclusively female, the gender for whom aNSSI is more common (Bresin & Schoenleber, 2015). While sample homogeneity is advantageous for characterizing one population with ample statistical power, our results may not necessarily generalize to adolescent boys, to younger or older samples of girls, or clinical samples. Second, screening out adolescent girls with a lifetime history of MDD and Dysthymia likely excluded about 1-7% of the population (Lewinsohn et al., 1998). Although advantageous for the aims of this study, use of exclusion hinders efforts to generalize our results to samples of youth previously diagnosed with

depressive disorders. For instance, it is unclear whether traits such as melancholia are elevated in depressed youth who self-injure compared to depressed youth who do not self-injure. Third, we considered 13 personality facets, but this may have overlooked relevant facets for understanding aNSSI, such as Openness to Experience facets. Nevertheless, our results are quite similar to previous reports in adults (MacLaren & Best, 2010; Mullins-Sweatt et al., 2013). Fourth, we did not assess emerging personality disorders in our sample, and instead focused on normal-range personality traits. This choice was driven by the age of the cohort, which was too young to be assigned personality disorder diagnoses as per DSM-IV rules.

In summary, the combination of high trait melancholia, low conscientiousness, and high openness to experience distinguishes adolescent girls who self-injure from those who do not, and this profile is unlikely to be accounted for by psychiatric history. This is in contrast to the broad, non-specific personality profile for aNSSI that emerged from prior studies without consideration of, or control for, psychiatric history. These findings may be used to design accurate screening instruments for aNSSI, particularly in contexts in which detection is difficult. Information about affect, behavior, and cognition that underlie these traits could also help the design of interventions for aNSSI, such as adaptive coping mechanisms for high melancholia. The personality profile associated with aNSSI may also help advance understanding of etiology, such as pathways marked by low control, high negative affect, and high openness.

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Table 1

Sample Characteristics

	aNSSI (n= 43)		Non-aNSSI (n = 507)		Test
	M	SD	M	SD	
Age					
Proband	14.41	0.72	14.38	0.62	t(1,548) = -0.31, p = 0.76
Mother	45.58	4.99	46.38	4.61	t(1,547) = 1.08, p = 0.28
Father	48.10	5.55	48.32	5.06	t(1,543) = 0.27, p = 0.79
	N	%	N	%	
Caucasian	38	88.4	444	87.6	$\chi^2(1) = 0.02$, p = 0.88
Hispanic	8	18.6	52	10.3	$\chi^2(1) = 2.84$, p = 0.09
Both parents in home	34	79.1	437	86.2	$\chi^2(1) = 1.64$, p = 0.20
Household Income					$\chi^2(3) = 5.13$, p = 0.16
< \$60,000	7	17.1	57	12.4	
\$60,000-\$100,000	13	31.7	109	23.6	
\$100,000-\$150,000	15	36.6	153	33.2	
> \$150,000	6	14.6	129	30.8	
Highest Parent's Education					
At least one BA	38	88.4	465	92.1	
Neither BA	5	11.6	40	10.1	
Lifetime Psychopathology					
Any Diagnosis	21	48.8	131	25.8	Odds Ratio (95% Confidence Interval)
Any Anxiety Disorder	17	39.5	118	23.2	2.74 (1.46-5.15) **
Generalized Anxiety Disorder	4	9.3	16	3.2	2.16 (1.13-4.11) *
Specific Phobia	10	23.3	64	12.6	3.15 (1.00-9.87) *
Social Phobia	9	20.9	48	9.1	2.10 (0.99 - 4.46) *
Separation Anxiety	1	2.3	17	3.0	2.53 (1.15-5.59) *
Any Behavioral Disorder [†]	5	11.6	25	4.9	0.68 (0.09-5.22)
More than 1 Disorder	12	20.9	38	7.5	2.54 (0.92-7.00) *
					7.05 (2.52-19.72) *

Notes: Note: Parental education was unavailable for both parents in 2 cases. Household income was not reported in 48 cases.

.500>d =
*
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Table 2
Means, standard deviation, and effect size for personality traits by NSSI and DX

	NSSI						No NSSI						Partial eta squared			
	No DX			DX			No DX			DX			NSSI		DX	
	<i>a</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>					
<i>Big 5</i>																
Neuroticism	.83	3.23	0.82	3.53	0.79		2.55	0.75		3.13	0.70		0.08**	0.04**	0.01	
Extraversion ²	.81	3.79	0.68	3.37	1.01		3.84	0.76		3.61	0.76		0.04**	0.02**	0.00	
Conscientiousness	.78	3.35	0.50	2.92	0.61		3.78	0.64		3.50	0.61		0.00	0.01*	0.00	
Openness ¹	.74	4.11	0.56	4.00	0.55		3.84	0.59		3.81	0.62		0.04**	0.02**	0.00	
Agreeableness	.81	4.03	0.52	3.78	0.68		4.15	0.59		3.84	0.64		0.01*	0.00	0.00	
<i>Neuroticism facets</i>																
Melancholia	.87	3.04	1.16	2.99	0.77		1.97	0.76		2.40	0.79		0.08**	0.03**	0.01	
Anxiousness	.86	3.38	0.87	3.56	0.74		2.73	0.82		3.41	0.78		0.07**	0.00	0.01*	
Hostility	.80	2.65	0.66	2.82	0.88		2.05	0.71		2.52	0.80		0.02**	0.02**	0.01	
<i>Extraversion facets</i>																
Pos. Temp	.84	3.95	0.76	3.77	0.82		4.10	0.63		3.95	0.68		0.03**	0.01*	0.00	
Assertiveness	.85	3.48	1.01	3.01	1.10		3.49	0.83		3.16	0.98		0.01	0.01**	0.00	
Sociability	.79	3.63	0.73	3.27	0.73		3.85	0.69		3.55	0.71		0.01*	0.01**	0.00	
Venturesomeness	.81	4.15	0.74	3.88	0.88		4.10	0.65		3.9	0.69		0.00	0.01*	0.00	
<i>Conscientiousness facets</i>																
Self-Discipline	.84	3.00	0.81	2.69	0.75		3.50	0.78		3.20	0.85		0.05**	0.03**	0.02	
Dutifulness	.83	4.10	0.61	3.62	0.78		4.38	0.54		4.11	0.60		0.03**	0.01*	0.00	
Deliberate ¹	.80	3.27	0.78	3.19	0.80		3.65	0.72		3.35	0.76		0.03**	0.03**	0.00	
Achievement Striving	.80	4.34	0.59	3.92	0.76		4.28	0.59		4.11	0.68		0.01*	0.00	0.00	
Orderliness	.87	3.22	0.81	2.71	0.75		3.57	0.88		3.51	0.94		0.00	0.01**	0.00	

Note:

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^{*,**}
= $p < 0.01$,
* = $p < 0.05$.

Partial Eta squared and p value correspond to model estimated effects while controlling for age and parental education.

Table 3

Binary Logistic Regression

	B	OR	95% CI
Melancholia	1.00**	2.73	1.79-4.20
Conscientiousness	-0.95**	0.39	0.21-0.72
Openness to Experience	1.07**	2.91	1.52-5.57
Lifetime Psychiatric Diagnosis	0.30	1.35	0.95-1.92

Note: Lifetime Psychiatric Diagnosis coded Yes =1 and No = 0. Backwards Selection retained Lifetime Psychiatric Diagnosis at $p = 0.095$. Nagelkerke R Square for final model was .282. Due to missing data, sample size included 42 NSSI cases and 486 non-NSSI cases.