

Understanding Subtypes of NSSI Participants through the Lens of the Dark Triad: Inoffensive, Aggressive, and Narcissistic

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Abstract

The Dark Triad encompasses three domains: Machiavellianism, narcissism, and psychopathy. Although most existing research on the Dark Triad mainly focused on healthy populations using the variable-centered approach, heterogeneity in Dark Triad among mental health vulnerable groups (i.e., NSSI participants) is not yet well understood. The current study aims to extend the research on the Dark Triad using the individual-centered approach among NSSI participants, which contributes to understanding the heterogeneity in the Dark Triad, and the relationship between subtypes based on the Dark Triad and attitudes towards seeking professional psychological help. Relying on latent profile analysis, we explored the subtypes based on the Dark Triad among 469 secondary school students (51.39% female) who had engaged in NSSI. Latent profile analysis identified three subtypes (i.e., inoffensive, aggressive, and narcissistic), which differentially predicted individuals' help-seeking attitudes. Specifically, the results showed that the aggressive subtype had reduced help-seeking attitudes than the inoffensive and narcissistic subtypes. Our findings provide important contributions to the literature on the Dark Triad and shed light on the early identification and intervention of NSSI.

Keywords: Non-suicidal self-injury, Dark Triad, Attitude towards seeking professional psychological help

1 Introduction

The Dark Triad was first proposed by Paulhus & Williams (2002), which includes three dark personality traits: Machiavellianism, narcissism, and psychopathy. Machiavellianism reflects individuals' ruthless, good at manipulation, outcome-oriented, and moral neglect. Narcissism

represents behaviors associated with self-centeredness, vanity, arrogance, and self-righteousness. Psychopathy embodies impulsiveness, stimulus-seeking, and lack of empathy. Most previous studies used a variable-centered approach and explored the correlates of three dimensions of the Dark Triad (van Geel et al., 2017; Xu et al., 2022). However, little is known about how the different Dark Triad components are combined at the individual level, especially in the population suffering from non-suicidal self-injury. Therefore, the current study focused on the combination of the Dark Triad in a specific subclinical sample of non-suicidal self-injury students.

Non-suicidal self-injury (NSSI) refers to, in the absence of clear suicidal intention, individuals directly, intentionally, and repeatedly damaging their body tissue, including cutting, burning, biting, and scratching the skin (Washburn, 2019). These behaviors, generally not accepted by society, bring light or moderate damage to the body and will not lead to death (Kocsis, 2013). According to global epidemiological reports, teenagers worldwide have a high prevalence of NSSI (Xiao et al., 2022). A meta-analysis of NSSI among Chinese middle school students showed a prevalence rate reaching 22.4% (Lang, Yao, 2018). While researchers have uncovered the cluster characteristics of common personality theories such as the Big Five among individuals engaging in NSSI, few researchers have studied the Dark Triad profiles in NSSI adolescents in previous studies (Goddard et al., 2021). Some studies have shown that personality traits are closely related to adolescents' NSSI and that adolescents with reduced affinity and increased emotional instability are more likely to engage in NSSI, and the Dark Triad may also aggravate the individual's emotional instability and thus trigger self-injury (Goddard et al., 2021; Kiekens et al., 2015). Therefore, exploring the Dark Triad profiles of adolescents reporting NSSI helps mental health practitioners and school psychologists to identify subtype characteristics among students and encourage them to seek professional help based on

subtype features to diminish the physical and psychiatric damage as much as possible, which has significant practical implications for the mental health care of secondary school students.

1.1 Dark Triad and Professional Psychological Help-seeking Attitude

Psychological help-seeking can be conceptualized as professional and non-professional psychological help-seeking (Rowe et al., 2014). The former points to professionals engaged in mental health work, such as psychiatrists, psychological counselors, and psychotherapists, while the latter points to non-professional social support resources, such as parents, peers, teachers, etc. Only one in three individuals facing mental health challenges seeks professional help annually (Wang et al., 2007). Among various factors influencing people's help-seeking processes, one of the most frequently cited is attitudes toward help-seeking. (Nam et al., 2010). Professional psychological help-seeking attitude refers to the overall evaluation of individuals to ask for help from professionals when encountering psychological and emotional difficulties to solve psychological confusion (Rickwood et al., 2005). Seeking professional help serves as an important protective factor for self-injury in that it may significantly reduce the risk of serious physical injury in adolescents (Watanabe et al., 2012). Worryingly, nearly half of them never seek any sort of help, and only very few teenagers will seek psychological help (Ystgaard et al., 2009). Especially, adolescents with an NSSI history typically have a negative attitude toward professional psychological help, which gives rise to a serious treatment gap (Rowe et al., 2014). The Theory of Planned Behavior (TPB) could be utilized to understand the role of attitudes toward professional help-seeking, which posits that an individual's behavior is influenced by their intention to engage in the behavior, attitudes toward it, perceived social norms, and perceived control over it (Ajzen, 1985). Chandrasekara (2016) confirmed that positive attitudes would lead to greater psychological help-seeking behavior via a

greater intention to seek psychological help. Given the importance of a professional psychological help-seeking attitude well-described, researchers attempted to identify potential personality antecedents to understand better the protective and risk factors from the trait perspective.

Several studies have demonstrated that some dimensions of the Big Five such as extraversion and agreeableness were strongly associated with more positive help-seeking attitudes, whereas mixed results were found for openness, conscientiousness, and neuroticism (Atik & Yalcin, 2011; Murphy & Mackenzie, 2024; Park et al., 2018). Besides, traits like personal growth initiative, sense of coherence, mindfulness, low self-esteem, high trait anxiety, and external locus of control were also considered significant related factors (Barwick et al., 2009; Oluyinka, 2011). Although the relationship between many common personality theories and professional psychological help-seeking attitudes has been unraveled, little knowledge exists regarding its association with dark personality traits (e.g., the Dark Triad). Previous studies have not directly investigated the relationship between the Dark Triad and professional psychological help-seeking attitude, but we could find cues according to empirical evidence from proximate constructs. Bruno (2019) demonstrated that narcissism and psychopathy negatively predicted advice-seeking behavior, while Machiavellianism did not show significant associations, which indicates that components of the Dark triad may exhibit heterogeneity when predicting attitudes. In other studies, however, narcissism has significantly positively predicted some adaptive interpersonal features, such as helping others in public to receive compliments or benefits (Konrath & Tian, 2018). Conceptualized in the Dark Triad, different from the double-sword nature of narcissism, Machiavellianism, and psychopathy are purely positively related to a variety of antisocial behaviors. This may be because, in the structural exploration of the Dark Triad, narcissism was found to be

relatively independent of the construct of Machiavellianism and psychopathy, as the latter two are called the "Dark Dyad," which contain more similar characteristics in detail on the item level and closely linked each other (Rogoza & Cieciuch, 2020). As a more socially aversive trait, psychopathy acts as an upper construct encompassing Machiavellianism, extra impulsivity, and risk-taking (Glenn & Sellbom, 2015). As described above, it is suggested that Machiavellianism and psychopathy are "darker" than Narcissism. Narcissism is the least correlated in the Dark Triad conceptual model, which is different from the Dark Dyad in the relationship with basic personality traits and values (Rogoza & Cieciuch, 2020). Due to the dark trait structure, compared to Dark Dyad, narcissism may have distinct positive mental health-related outcomes. Narcissistic grandiosity has been shown to influence mental health indirectly through self-esteem, a general judgment of oneself, acting as an adaptive factor of the emotional process (Sedikides et al., 2004). For instance, narcissistic adolescents with higher self-esteem may be better equipped to alleviate feelings of shame related to non-suicidal self-injury (NSSI). (Forrester et al., 2017; Schoenleber et al., 2014). Rhodewalt & Morf (1995) demonstrated that highly narcissistic individuals are usually more popular than people with higher Machiavellianism or psychopathy. It could be reasoned that adolescents engaging in NSSI merely with high levels of narcissism tend to be more confident when interacting with mental health helpers, which facilitates their willingness to turn to counselors to seek help to address NSSI-related mental distress. Taking the above into account, the current study assumes that in the latent profile combination of the Dark Triad, individuals with high narcissism may be more likely to seek professional psychological help compared to those with high Machiavellianism or high psychopathy.

1.2 the Dark Triad profiles from an individual-centered approach

Numerous studies adopted a variable-centered approach to treat the Dark Triad as a multidimensional personality trait variable to analyze its predictive effect, which mostly ignores possible heterogeneous subgroups. In clinical psychology, Latent Profile Analysis (LPA) is regarded as a person-centered method that shows how different Dark Triad components are combined at the individual level of students reporting NSSI. It is noteworthy that person-centered Dark Triad research is scarce and latent profiles identified by researchers were inconsistent from three to five profiles. For example, Kam & Zhou (2016) identified three profiles: high Dark Triad, middle Dark Triad, and low Dark Triad. Nguyen et al. (2021) have divided the French employees based on the Dark Triad into four latent profiles: benevolent, high Machiavellianism, high psychopathy, and malevolent. Maneiro et al. (2020) have classified undergraduate samples into five subgroups: low-Dark Triad, narcissistic, Machiavellian/narcissistic, psychopathic, and Machiavellian/psychopathic. The outcome variables of these latent profile studies include work behavior, risk-taking behavior, etc. Nevertheless, how the different patterns of the Dark Triad influence professional psychological help-seeking attitudes has not been studied yet. Machiavellianism and psychopathy were negatively linked to task-oriented coping and positively to the emotional-oriented coping process (Birkás et al., 2016). Students reporting NSSI history with an increased level of Machiavellianism and psychopathy tend to focus on avoidant behaviors instead of problem-solving strategies, which could prevent them from seeking reliable mental health information and services.

1.3 Correlates of the Dark Triad profiles

It has been shown that both grade and gender have significant effects on Dark Triad. In terms of age, some studies have shown that age is significantly negatively associated with the components of the Dark Triad (Barlett & Barlett, 2015; Kawamoto et al., 2020). For gender, males tend to have

higher Dark Triad levels than females (Jonason & Davis, 2018). Therefore, this study also included grade and gender as the covariates of the Dark Triad patterns, helping establish the latent profile model of the Dark Triad.

Family function is also recognized as a covariate of the pattern of the Dark Triad in this study. Family functioning is a comprehensive evaluation of the operational status of the family system, the relationships among family members, and the family's adaptability to its environment (Miller et al., 2000). Some researchers use the specific characteristics of the family to define the family function, including family members' communication quality, family intimacy, adaptability, etc. (Beavers & Hampson, 2000). Previous studies have not directly studied the relationship between family function and the Dark Triad profiles. Still, existing studies have shown that early childhood adversities make individuals score higher levels of Dark Triad, which may suggest that individuals with deteriorated family function are more likely to be distributed to a malicious Dark Triad subgroup (Carver et al., 2014; Griskevicius et al., 2011). The aggravated discouraging family relations and reduced supportive family relations among secondary school students were found to be associated with narcissism (Ummeet et al., 2016). Parental style showed a negative correlation with adaptive personality traits. Lower parental warmth and greater parental hostility predicted declines in a composite trait combining emotional stability, conscientiousness, and agreeableness (Schofield et al., 2012). Given the family playing a major role in the development and maintenance of NSSI, for instance, the NSSI family distress cascade theory suggests that a series of negative emotions and self-assessments can result in heightened vigilance and greater efforts by caregivers to manage the child's behavior, which adolescents may perceive as an invasion of their personal space, which could lead to poorer family dynamics and a higher risk of NSSI (Waals et al., 2018). The intergenerational

transmission of the Dark Triad and emotional reactivity has been demonstrated by establishing an actor-partner interdependence model (APIM) (Li et al., 2022). Jonason et al. (2014) uncovered the association between parent-children care and the Dark Triad. Machiavellianism and Narcissism were negatively correlated with the quality of parental care, while psychopathy was positively correlated with avoidant attachment. Recent studies indicate that caregivers' Dark Triad traits may correlate with an increased level of Dark Triad traits in emerging adults, as well as various behavioral health issues. (Lau et al., 2024). Besides the influence of parents, sibling relation quality also had a significant effect on primary psychopathy and borderline traits (Ferencz et al., 2023). After summarizing the evidence suggesting that family environment influences personality traits and highlights the crucial role of family dynamics in NSSI, we hypothesize that family function would affect Dark Triad profiles.

Perceived chronic social adversity, also known as social trauma, refers to the individual's perception of all kinds of adversity information in daily life, such as being bullied, neglected, threatened, etc. (Zhang et al., 2017). The evidence elucidates that childhood is a sensitive period when exposure to social adversity can lead to behavioral, psychological, and epigenetic changes that may last into adulthood in light of the fact that social adversity can become biologically embedded in cells at the molecular level (Cunliffe, 2016; Snyder-Mackler & Snyder-Mackler, 2022). Social safety theory posits that forming and maintaining friendly social bonds is a fundamental organizing principle of human behavior. Additionally, it suggests that threats to social safety constitute a significant psychological stressor (e.g., social chronic adversity) that can increase the risk of disease. (Slavich, 2020). This theory provides insights into extending studies of social chronic adversity to adolescents with a history of NSSI, helping to understand its consequences on

personality development. There is plenty of evidence that adversity endangers personality development in childhood (Lengua & Wachs, 2012). Particularly, adversity may lead to an increase in trait Neuroticism in adolescence and adulthood (Jeronimus et al., 2014; Leikas & Salmela-Aro, 2015). This may be because adolescence is a period in which biological and environmental changes increase youth's sensitivity to stress (Hollenstein & Loughheed, 2013). Although research shows that stressful life events lead to increased fear and frustration, decreased effortful control, increased emotionality, and decreased agreeableness, little attention has been focused on the effect of social adversity on dark personality from the individual-centered perspective in youth engaging in NSSI (Laceulle et al., 2015; Rakhshani & Furr, 2021). According to empirical evidence demonstrating the relationship between adolescent adversity and light personality traits we mentioned above, we assume that perceived social chronic adversity would correlate with Dark Triad profiles.

1.4 The current study

To our knowledge, no existing study has investigated the subtypes of Dark Triad in the context of secondary school students with a history of NSSI. The objectives of the current study were (1) to identify latent profiles of Dark Triad in secondary school students reporting NSSI using latent profile analysis; (2) to examine the potential correlates of the profiles encompassing gender, grade, family function, and perceived chronic social adversity; (3) to untangle whether the Dark Triad profiles have significantly different levels of professional psychological help-seeking attitudes. The current study contributed uniquely to the existing literature by considering the Dark Triad from the perspective of an individual-centered approach to illustrate the nature of dark personalities among students reporting NSSI and the related help-seeking outcome.

2. Methods

2.1 Participants

We recruited adolescents from a secondary school in Chengdu, China. Students with a self-injury history were invited to participate in the study. A total of 469 students (51.39% female) volunteered to finish questionnaires and were ensured that their responses would be anonymous and confidential. 68 (14.50%) of them from 7th grade, 82 (17.48%) from 8th grade, 75 (15.99%) from 9th grade, 89 (18.98%) from 10th grade, 72 (15.35%) from 11th grade, the rest 83 (17.70%) were from 12th grade. 328 students (69.94%) had never received counseling. 374 students (80.81%) were from cities or towns, and 90 students (19.19%) were from rural areas. This study was approved by the Institutional Review Board of the Psychological Research and Counseling Center, Southwest Jiaotong University.

2.2 Materials

Dark Triad

The Dark Triad traits were measured using the 12-item Dirty Dozen scale, with 4 items assessing each of the Dark Triad dimensions, namely, Machiavellianism, psychopathy, and narcissism (Jonason & Webster, 2010). Items used a 7-point Likert scale ranging from 1 (Not at all like me) to 7 (Very much like me). The mean of 12 items was calculated to represent the Dark Triad construct. Higher scores indicate higher levels of Dark Triad. The Cronbach's alpha is 0.83.

Professional psychological help-seeking attitudes

The ATSPPH-S (Fischer & Farina, 1995) is based on the original 29-item version developed by Fischer & Turner (1970). We used the shortened Chinese version revised by Liu (2012), with 10 items using a 4-point Likert measure ranging from 1 (Totally disagree) to 4 (Totally agree). The mean of 10 items was calculated to represent the construct, with higher scores indicating more

positive attitudes towards seeking professional psychology help. The Cronbach's alpha is 0.80.

Perceived chronic social adversity

Perceived chronic social adversity was measured using the Chinese version of the 28-item Perceived Chronic Social Adversity Questionnaire (PCSAQ) developed by Zhang et al. (2017), consisting of three dimensions, with 10 items assessing social exclusion, 13 items assessing overcontrol, and 5 items assessing weakness in social competition. Items used a 5-point Likert scale ranging from 1 (Totally disagree) to 5 (Totally agree). A mean of 28 items was calculated to represent the construct of perceived chronic social adversity. Higher scores indicate higher levels of perceived chronic social adversity. The Cronbach's alpha is 0.94.

Family function

The Family Function Assessment Scale was utilized, specifically, the General Function subscale revised by Liu & He (1999). This subscale is suitable for individuals aged 12 and above and comprises 12 items. A 4-point Likert scale is employed, ranging from 1 ("very much like my family") to 4 ("not at all like my family"), with higher scores indicating poorer family functioning. In this study, Cronbach's alpha is 0.87.

Data analysis

Descriptive statistics were analyzed using the software package SPSS 22.0. Then a series of latent profile analyses (LPA) were conducted using Mplus 7.4, including all 12 items of three Dark Triad dimensions (Machiavellianism, narcissism, and psychopathy) as indicators. A total of six LPA models were established using a Maximum Likelihood robust estimator (MLR), each of which had its own several fit indices, such as Akaike Information Criterion (AIC), Bayes Information Criterion (BIC), and adjusted BIC (aBIC), Lo-Mendell-Rubin Adjusted Likelihood Ratio Test (LMR),

Bootstrapped Likelihood Ratio Test (BLRT), Entropy and posterior probabilities. The LMR and BLRT compare a k-class model to k-1 class model. A significant p-value of the LMR and BLRT indicates that the estimated model fits significantly better than the model with one class less. According to Nylund et al. (2007), the BLRT is a more accurate criterion for the number of classes than the LMR and the BIC is also recommended for determining the number of classes in LPA. Therefore, the best solution was selected by considering the fit indices of BIC and BLRT. Besides, interpretable and theoretically meaningful solutions should be preferred (Collins & Lanza, 2009). If two models both have similar fit indices and plausible theoretical basis, the more parsimonious one would be selected. ANOVAs were conducted to validate the Dark Triad profiles. Furthermore, the covariates would be included using the three-step method, while the BCH method was implemented for LPA with the distal outcome (Asparouhov & Muthén, 2014; Bakk & Vermunt, 2016).

3. Results

3.1. Descriptive statistics and correlations

The results showed that Means, standard deviations (SD), and Pearson correlation of research variables were presented in Table 1. Positively significant intercorrelations were found among components of the Dark Triad. And all the Dark Triad traits were significantly and positively correlated with family functioning and PSCA, but negatively correlated with ATSPPH. Gender was significantly associated with Narcissism and ATSPPH. Grade was significantly positively correlated with Machiavellianism and Psychopathy.

Table 1

Descriptive statistics and correlations among variables.

	M	SD	1	2	3	4	5	6	7	8
1. Machiavellianism	2.43	1.32	–							
2. Psychopathy	2.30	1.16	0.53**	–						
3. Narcissism	4.05	1.48	0.36**	0.16**	–					
4. Family functioning	2.19	0.55	0.29**	0.35**	0.14**	–				
5. PSCA	2.04	0.64	0.40**	0.37**	0.23**	0.45**	–			
6. ATSPPH	3.02	0.52	–0.26**	–0.32**	0.02	–0.21**	–0.20**	–		
7. Gender	0.51	0.50	0.02	–0.07	0.10*	–0.09	0.04	0.15**	–	
8. Grade	2.56	1.69	0.18**	0.12**	0.05	0.05	0.05	–0.01	0.02	–

Note. M, mean; SD, standard deviation.

* $p < 0.05$.

** $p < 0.01$.

3.2 the Dark Triad profiles

The fit indices for the one to six-profile models are displayed in Table 2. The three-profile solution was found to have best-fit indices because of lower AIC, BIC, and aBIC compared to the two-profile model. LMR and BLRT p value suggest that the three-profile model was better than the two-profile model. Due to insignificant LMR p value and small class sizes (less than 5% or fewer than 50 cases) in four to six-profile models, we selected the three-profile model as the best solution. As displayed in Figure 1, the analysis of profiles evidenced three different subgroups of individuals that were identified based on their dimension scores on three components of the Dark Triad (Machiavellianism, psychopathy and narcissism: (1) inoffensive subtype (Class 1, $n = 105$, 23.2%), (2) aggressive subtype (Class 2, $n = 121$, 25.9%), (3) narcissistic subtype (Class 3, $n = 243$, 50.9%). Table 3 displays the results of one-way ANOVA showed that there were significant differences in Machiavellianism ($F(2,466) = 442.18$, $p < 0.01$, partial $\eta^2 = 0.66$), psychopathy ($F(2,466) = 99.81$, $p < 0.01$, partial $\eta^2 = 0.30$) among latent profiles and narcissism ($F(2,466) = 251.94$, $p < 0.01$, partial $\eta^2 = 0.52$). The post hoc test showed that Machiavellianism score in Class 2 was significantly higher than that in Class 3, and similarly, Class 3 was significantly higher than that in Class 1. Psychopathy score in Class 2 was significantly higher than that in Class 1 and Class 3. Narcissism score in Class

2 was significantly higher than that in Class 3, and Class 3 was significantly higher than that in Class 1.

Table 2
LPA model fit indices.

Solution	N _p	AIC	BIC	aBIC	P(LMR)	P(BLRT)	Entropy	Posterior Probabilities
1-profile	24	21763.70	21863.32	21787.15	–	–	–	–
2-profile	37	20584.75	20738.33	20620.90	<0.05	<0.05	0.92	0.711/0.289
3-profile	50	20241.51	20449.04	20290.35	<0.05	<0.05	0.88	0.232/0.259/0.509
4-profile	63	19953.93	20215.42	20015.47	>0.05	<0.05	0.92	0.501/0.040/0.241/0.218
5-profile	76	19790.01	20105.45	19864.24	>0.05	<0.05	0.89	0.215/0.038/0.247/0.406/0.094
6-profile	89	19641.96	20011.36	19728.89	>0.05	<0.05	0.89	0.195/0.332/0.157/0.180/0.037/0.100

Note. N_p, number of free parameters.

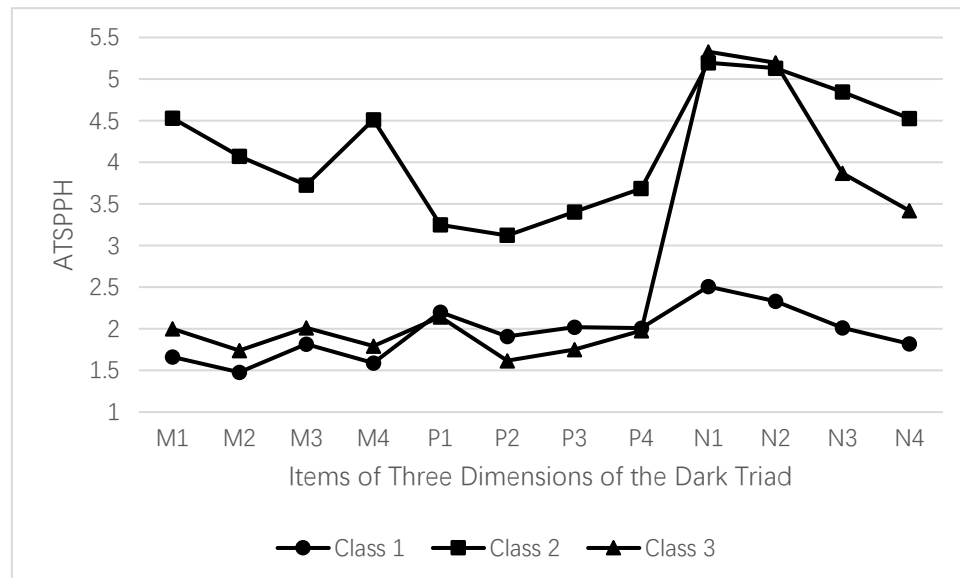


Fig. 1. Three-profile model based on the Dark Triad items.

Note. M1-M4 items belong to the Machiavellianism dimension. P1-P4 items belong to the Psychopathy dimension. N1-N4 items belong to the Narcissism dimension.

Table 3
Descriptive statistics and differences among profiles in each dimension score of the Dark Triad.

	Class1 <i>M (SD)</i>	Class2 <i>M (SD)</i>	Class3 <i>M (SD)</i>	<i>F</i>	Partial η^2	Class comparisons
Machiavellianism	1.63 (0.72)	4.23 (0.90)	1.88 (0.73)	442.18**	0.66	2>3>1
Psychopathy	2.03 (1.08)	3.37 (1.13)	1.88 (0.82)	99.81**	0.30	2>1,3
Narcissism	2.10 (0.70)	4.94 (1.31)	4.44 (0.99)	251.94**	0.52	2>3>1

Note. Partial η^2 = partial eta square effect size.

3.3 Predictors of the latent profiles using the three-step method

Table 4 displays the results of multinomial logistic regression examining the effect of covariates on the latent profiles. Compared to those in the “inoffensive” subtype, more senior students ($OR = 1.27, p < 0.05$) and students who experienced more PCSA ($OR = 4.18, p < 0.01$) were more likely to be classified into the “aggressive” subtype. Whereas, no covariates significantly predicted membership in the “narcissistic” subtype compared to the “inoffensive” subtype.

Table 4
Three-step multinomial logistic regression analysis with covariates.

Predictor	Class1 vs. Class2			Class1 vs. Class3		
	Estimate	SE	OR	Estimate	SE	OR
Gender	0.20	0.31	1.22	0.26	0.27	1.30
Grade	0.24*	0.10	1.27	-0.03	0.08	0.97
FAD	0.28	0.33	1.32	-0.28	0.31	0.76
PCSA	1.43**	0.32	4.18	0.39	0.29	1.48

3.4 Differences between profiles in ATSPPH

Comparisons in ATSPPH for the three-profile solution are displayed in Table 5. The BCH results show the extent to which significant differences exist among the profiles and pairwise comparisons. Specifically, an overall chi-square test showed significant mean differences between profiles regarding ATSPPH ($\chi^2 = 30.54, p < 0.01$). Individuals in the “inoffensive” subtype ($M = 3.05, SE = 0.05; \chi^2 = 12.79, p < 0.01$) and the “narcissistic” subtype ($M = 3.13, SE = 0.03; \chi^2 = 30.30, p < 0.01$) each had a significantly higher level of ATSPPH than in the “aggressive” subtype. Moreover, the “inoffensive” subtype and the “narcissistic” subtype did not significantly differ ($\chi^2 = 1.40, p = 0.24$).

Table 5
Comparisons across subgroups on ATSPPH using the BCH method.

	Class1	Class2	Class3
	<i>M(SE)</i>	<i>M(SE)</i>	<i>M(SE)</i>
ATSPPH	3.05(0.05)	2.78(0.05)	3.13(0.03)
Overall χ^2		30.54**	
Summary		1,3 > 2	

4. Discussion

The current study is the first to investigate the subtypes of individuals with NSSI history in terms of dark personality traits. We identified three subtypes of NSSI participants in the student sample, namely “inoffensive”, “aggressive”, and “narcissistic”, which is not consistent with any previous research mentioned in the literature review such as Maneiro et al. (2020). It reflected the distinction of the Dark Triad constellation in students with NSSI history from other populations. Firstly, almost half of the students were classified into the narcissism group and approximately three-quarters of students showed a salient narcissism, because a notable part of students with prominent narcissism, in line with the attention-seeking hypothesis of narcissism, may be inclined to engage in NSSI to achieve interpersonal objectives, like drawing others’ attention (DeWall et al., 2011; Klonsky & Glenn, 2009; Nock & Prinstein, 2004). Moreover, only about one-quarter of the students were classified into the “aggressive” subtype with eye-catching levels of Machiavellianism and Psychopathy. That said, despite being threatened by emotional problems, only a small part of individuals were trapped in the “total malevolent” pattern. In other words, most students with NSSI history were not influenced by the Dark Dyad. Additionally, nearly one-quarter of students were affiliated with the “inoffensive” subtype, who may be considered easy-going or submissive, compared to NSSI participants included in the “aggressive” subtype, even though NSSI is strongly linked with reduced self-control postulated by a network analysis (Mancinelli et al., 2022). Also,

there is evidence demonstrating that the relationship between NSSI and impulsivity was mixed, perhaps due to the population heterogeneity corroborated by the current study (Hamza et al., 2015). All three dimensions of the Dark Triad in the “aggressive” subtype are stronger than the other two subtypes. It suggested that “aggressive” NSSI participants had increased narcissism than even “narcissistic” counterparts. They may be more likely to be involved in interpersonal conflicts in light of integral anti-social tendencies in various contexts (e.g., romantic relationships and workplace) revealed by previous studies, which could lead to NSSI engagement as a result of interpersonal failure (Brewer et al., 2023; LeBreton et al., 2018; Peel-Wainwright et al., 2021).

In the three-step analysis, we identified that grade and perceived chronic social adversity were predictors of the Dark Triad profiles, whereas the predictive effects of gender and family function were statistically insignificant, which was not consistent with the findings of prior studies. Existing meta-analysis illustrated that controlling for the shared variance between the Dark Triad, at least psychopathy exhibited significant medium-sized sex differences in the Dark Triad (Muris et al., 2017). However, from the individual-centered perspective, we did not find any gender difference among subtypes of NSSI participants. The fact that sample characteristics of NSSI participants may differ from the general healthy population or university student sample may contribute to the inconsistency. The findings indicated that higher grade (e.g., 8th grade to 7th grade) led to a higher probability of being classified into the “aggressive” subtype compared to the “inoffensive” subtype. In other words, a high grade served as a risk factor for NSSI participative students, which was not in line with the results of correlational studies arguing a negative relationship between age and dark traits. Nevertheless, a 10-year longitudinal study covering childhood, adolescent, and emerging adults, uncovered that childhood dark traits further demonstrate a positive association with an adult

Dark Triad measure (De Clercq et al., 2017). It can contribute to explaining findings in the current study, as subtypes of NSSI-involved students within the Dark Triad may originate from specific early dark traits gradually developing into adult Dark Triad through adolescence. Following this line of thought, it is crucial to pay attention to early dark traits in students involved in NSSI. If early intervention is implemented, the risk of these students becoming “aggressive” NSSI participants could be minimized. The predictive effect of family function was trivial and insignificant, indicating that while the relationship was found in variable-centered studies and family factors always contribute tremendously to NSSI, this study cannot extend the results to an individual-centered study (Kelada et al., 2018). Compared to the role of family, chronic disadvantageous experiences in the social context may be more vital because perceived chronic social adversity showed a strong explanatory power statistically. If the score for perceived chronic social adversity increases by 1, the likelihood of students being categorized as "aggressive" instead of "inoffensive" would increase by 318%. The suitability of implementing social safety theory in NSSI participants was confirmed, as the social trauma students experienced would enhance the sense of threat to social safety, which would lead to constant psychological stress endangering the process of personality development and eventually construct a stable behavioral tendency of the Dark Triad (Slavich, 2020).

Findings showed that "aggressive" NSSI participants have a decreased attitude towards seeking professional psychological help than "inoffensive" and "narcissistic" counterparts. It can be understood from the perspective of the coping strategy. The Dark Dyad, namely Machiavellianism and psychopathy are regarded as negative correlates of task-oriented coping and positive correlates of emotion-oriented coping process suggesting a more emotional reaction to stress (Birkás et al., 2016). "aggressive" NSSI participants, due to a manifestation of salient Machiavellianism and

psychopathy, are inclined to deal with stressful events by emotion expression, blaming others and self-blame, which may prevent students from attempting to solve problems in time with a positive attitude (Endler & Parker, 1994). To some extent, the current study also supports the viewpoint that the Dark Dyad represents the core of aversion of the Dark Triad, in that attitude towards seeking professional psychological help of "narcissistic" individuals scoring low Machiavellianism and psychopathy was statistically equivalent to "inoffensive" individuals and higher than "aggressive" individuals (Rogoza & Cieciuch, 2020). The finding is consistent with the relationship between narcissism and increased positive mental attitude revealed by Debska et al. (2021) demonstrating that people with sufficient self-esteem could translate their mental resources into commitment essential for encouraging them to hold a positive mindset when contemplating whether to turn to mental health professionals for seeking help. It could be reasonably convinced that in the context of Dark Triad profiles, the primary determinant of attitude towards seeking professional psychological help among students engaging in NSSI might be the salience of the Dark Dyad.

5. Theoretical and Practical Implications

The above findings contribute theoretically to the existing literature. Firstly, the current study addressed the research gap by investigating the subtypes of NSSI participants, while prior studies explored Dark Triad profiles dominantly focused on healthy populations such as college students and employees. Notably, Wang et al. (2024) summarized the results of NSSI subtype exploration, which revealed that most studies determined NSSI subtypes only based on NSSI characteristics using small samples (even N=68) (Sack et al., 2024). This line of research may be biased due to routinely including variables related to NSSI itself and facing the hazard of an unsound statistical power. As we found that heterogeneity exists in NSSI participants, the current study substantiated

that not only can we classify NSSI participants depending on NSSI characteristics (e.g., frequency, method, severity, and function), but can identify NSSI participants as "inoffensive", "aggressive" and "narcissistic" according to distinct Dark Triad profiles, which provided an important supplement for the typology of individuals engaging in NSSI (Baer et al., 2020; Daukantaite et al., 2021; Radziwillowicz & Lewandowska, 2017). Secondly, the current studies support the idea that early dark traits can develop into the adult Dark Triad over time by demonstrating that students with higher grade are more likely to become "aggressive" individuals resisting seeking professional psychological help (De Clercq et al., 2017). It points out that the Dark Triad in NSSI participants may be rooted in early life. Thirdly, the current study extended social safety theory to the area of the Dark Triad by identifying the predicting role of perceived chronic social adversity. Fourthly, attitudes towards seeking psychological professional help differ in subtypes of the Dark Triad, which can deepen the understanding of health behaviors from the lens of dark personalities.

Our findings have several practical implications. Firstly, the knowledge of the Dark Triad should be integrated into the NSSI intervention training for school psychologists. The innovative classification of NSSI participants through the perspective of the Dark Triad allows school psychologists to consider personality types when dealing with emergent NSSI cases or leading students with NSSI history to receive professional assessments. It is necessary to pay attention to the cues of NSSI among "aggressive" individuals given that they may be less likely to trust the effectiveness of psychological interventions. Hence, it becomes more challenging for them to disclose and seek help from professionals actively. In such cases, due to failure to receive intervention in time, "aggressive" students may develop more severe physical hurt and increase the risk of future suicide (Aseltine et al., 2007). There is evidence indicating that school-based early

intervention effectively reduced NSSI for adolescents with a history of NSSI (Baetens et al., 2024).

It is promising that Dark Triad subtypes will be identified to improve tailored programs. For example, mental health literacy should be a critical addition to facilitating attitude change among “aggressive” individuals (Wei et al., 2013). Besides, the finding that the higher grade is associated with “darker” subtypes gains insight into paying more attention to NSSI participants’ personality development. School psychologists and child and adolescent welfare facilities should assess the dark traits of individuals with a history of NSSI to prevent the gradual enforcement of the Dark Triad. Additionally, students experiencing consistent pressure such as academic failure and interpersonal isolation should be provided with both practical assistance and counseling, in case chronic stress leads to an “aggressive” pattern, which is considered an enormous threat to establishing a high-quality friendship and aggravates NSSI behavior due to interpersonal difficulties and distrust to seek help from qualified psychologists (Lyons, 2019).

6. Limitations and Future Directions

Several limitations to the current study should be noted. Firstly, we adopted a cross-sectional design, which limited the ability to make causal inferences from our data. Further research is needed to replicate our findings with longitudinal data. Secondly, our data was retrieved from self-report questionnaires from secondary school students. Hence, future research should recruit a clinical sample of NSSI as a supplementary to corroborate our findings further. In addition, Jonason & Webster (2010) demonstrated that the Dirty Dozen is a concise and valid measure for the Dark Triad and has been widely incorporated into other studies of dark personality profiles (Maneiro et al., 2020). However, some studies argued that the Dirty Dozen is too brief to capture critical construct variance (Carter et al., 2015; Miller et al., 2012). The Short Dark Triad (SD3) (Jones & Paulhus,

2014), as some assessment research recommended, may be the preferred concise inventory to assess the Dark Triad (Lee et al., 2013; Maples et al., 2014). Another, personality psychologists have found that a number of dark traits have a multidimensional structure with unequal levels of "darkness," which is to say that some dimensions may be more strongly associated with negative correlates than others (Marcus & Zeigler-Hill, 2016). In this case, narcissism has been developed as a two-dimensional structure, in which grandiose narcissism is believed to be associated with both positive and negative interpersonal outcomes, while vulnerable narcissism is "darker" and solely associated with negative outcomes (Dowgwillo et al., 2016). For future studies, it may be feasible to measure two components of narcissism respectively to understand better the effect of the Dark Triad profiles on attitudes towards seeking psychological professional help.

7. Conclusion

The current study identified three subtypes of NSSI participants based on distinct Dark Triad profiles. These were characterized by inoffensive, aggressive, and narcissistic. Higher grade and perceived chronic social adversity were risk factors of NSSI subtypes. Subtypes also differed in attitude towards seeking professional psychological help. Specifically, "aggressive" individuals have more positive attitudes than "inoffensive" and "narcissistic" individuals. Those findings are promising in furthering understanding of NSSI and may shed light on individualized treatment.

AUTHOR CONTRIBUTIONS

Mutian Hou (Research design, Data analysis, Manuscript writing, Review and editing),

Xi Xia Xu (Table and figure creation, Manuscript writing),

Haoyang Wu (Manuscript writing),

Xin Wu (Manuscript writing),

Shen Tang (Review and editing),

Zhuohong Cai (Review and editing).

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CONFLICT OF INTEREST STATEMENT

There were no conflicts of interest for any of the authors.

DATA AVAILABILITY

Data in the current study can be requested by email.

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