Modeling the Dark Triad of Personality (Machiavellianism, Psychopathy, and Narcissism) Based on Feelings of Inferiority, Anxiety, and Social Rejection with the Mediating Role of Impulse Control in Adolescents with a History of Running Away from Home

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A B S T R A C T

Objective: This study aimed to model the Dark Triad of personality (Machiavellianism, psychopathy, and narcissism) based on feelings of inferiority, social anxiety, and social rejection with the mediating role of impulse control in adolescents with a history of running away from home.

Methods and Materials: The research employed an applied and correlational design. The statistical population consisted of adolescents (girls and boys) aged 14–18 years attending drop-in harm reduction centers and night shelters in Tehran during the first half of 2023 (N = 2400). Using purposive sampling and Krejcie and Morgan's table, 331 participants were selected. Data were collected through validated instruments, including the Short Dark Triad Questionnaire (SD3), the Feelings of Inferiority Questionnaire, the Liebowitz Social Anxiety Scale (LSAS-SR), the Social Isolation Questionnaire, and the Barratt Impulsiveness Scale (BIS-11). Structural equation modeling (SEM) was conducted using AMOS software to test the hypothesized model.

Findings: Results demonstrated that feelings of inferiority (B = –0.42, β = –.36, p = .001), social anxiety (B = –0.39, β = –.31, p = .001), and social rejection (B = –0.34, β = –.28, p = .002) significantly predicted lower impulse control. In turn, impulse control significantly predicted Machiavellianism (B = –0.31, β = –.29, p = .001), psychopathy (B = –0.37, β = –.32, p = .001), and narcissism (B = –0.28, β = –.24, p = .003). Indirect effects confirmed mediation, for example, the effect of feelings of inferiority on Machiavellianism (β = –.11, p = .004). Model fit indices indicated acceptable fit (χ^2/df = 2.23, CFI = .95, RMSEA = .062).

Conclusion: Findings suggest that emotional vulnerabilities such as inferiority, anxiety, and rejection influence the development of Dark Triad traits primarily through impaired impulse control. These results emphasize the role of self-regulation as a protective factor and highlight the importance of preventive interventions targeting impulse control among vulnerable adolescents.

Keywords: Dark Triad; Machiavellianism; psychopathy; narcissism; feelings of inferiority; social anxiety; social rejection; impulse control; adolescents; runaway youth.

1. Introduction

The study of socially aversive personality traits has gained increasing attention in psychology, particularly with the growing body of work on the Dark Triad, which includes Machiavellianism, psychopathy, and narcissism (Crysel et al., 2013; Zeigler-Hill & Marcus, 2016). These traits, although distinct, share common features such as callousness, manipulativeness, and self-interest, which often result in maladaptive interpersonal behaviors (Jonason & Sherman, 2020). Understanding the antecedents, correlates, and outcomes of these traits in adolescents is particularly significant, as adolescence represents a crucial developmental stage for the formation of personality, coping mechanisms, and interpersonal strategies (Enayati et al., 2025).

The Dark Triad consists of three overlapping yet separable constructs. Machiavellianism is characterized by cynicism, manipulativeness, and a focus on self-interest through strategic deception (Jones, 2016). Psychopathy is distinguished by impulsivity, low empathy, antisocial tendencies, and thrill-seeking behaviors (Hartung et al., 2022). Narcissism, in contrast, manifests as grandiosity, entitlement, and a need for admiration, though it may also involve vulnerability and sensitivity to rejection (Zeigler-Hill & Marcus, 2016). Research suggests that despite their overlap, these traits contribute to unique patterns of maladaptive behaviors, such as risk-taking, aggression, and impaired relationship functioning (Crysel et al., 2013; Jonason & Sherman, 2020).

The functional consequences of the Dark Triad extend beyond individual pathology, influencing broader social and institutional dynamics. For example, Machiavellian individuals may employ manipulative tactics to gain resources (Jones, 2016), while psychopathic tendencies are associated with criminality, impulsive risk behavior, and disregard for norms (Hartung et al., 2022). Narcissism may contribute to strained interpersonal relationships due to excessive self-focus (Wai & Tiliopoulos, 2012). As such, the Dark Triad framework provides a valuable lens for examining the intersection between personality pathology and social outcomes.

Adolescence is a critical stage where maladaptive traits can crystalize into enduring personality features. Several studies have highlighted that socially aversive traits, if left unchecked, may predispose adolescents to risky behaviors such as delinquency, substance abuse, or running away from home (Enayati et al., 2025; Ramadanpour et al., 2022).

These outcomes often emerge through interactions between personality vulnerabilities and environmental stressors, such as family dysfunction, peer rejection, and societal marginalization (Jozi et al., 2023).

Importantly, Dark Triad traits in adolescents appear to be strongly associated with deficits in empathy and heightened interpersonal conflicts. Wai and Tiliopoulos (Wai & Tiliopoulos, 2012) demonstrated that individuals high in Dark Triad traits exhibit impairments in both cognitive and affective empathy, limiting their capacity to form prosocial connections. Similarly, He et al. (He et al., 2018) found that dark personality traits contributed to interpersonal rejection and marital instability in couples, illustrating how these traits undermine relational stability even beyond adolescence. Such findings underscore the potential for long-term social costs when maladaptive personality features manifest early.

Among the most powerful environmental stressors shaping maladaptive personality expression is social rejection. Rejection, ostracism, and marginalization have been identified as significant predictors of socially aversive traits (Turan et al., 2023; Turan, 2024). For example, Turan et al. (Turan et al., 2023) demonstrated that ostracism predicted social media addiction in adolescents through the mediating role of Dark Triad traits. The replication of this effect by Turan et al. (Turan, 2024) confirmed the robustness of the mediating function of Machiavellianism, psychopathy, and narcissism in maladaptive coping outcomes.

Other evidence suggests that rejection sensitivity interacts with Dark Triad traits to exacerbate problematic outcomes. Jozi et al. (Jozi et al., 2023) showed that rejection sensitivity was positively associated with Dark Triad features, which in turn predicted addictive social media behaviors, mediated by poor communication skills. This aligns with He et al. (He et al., 2018), who found that rejection within close relationships was particularly destabilizing for individuals with high levels of narcissism or Machiavellianism. Thus, rejection and ostracism represent both triggers and reinforcers of socially aversive traits.

The Dark Triad has been consistently linked to maladaptive and risky behaviors, particularly in adolescents. Crysel et al. (Crysel et al., 2013) found that individuals high in Dark Triad traits were more likely to engage in risk behaviors, such as gambling or unprotected sex. Similarly, Bradshaw et al. (Bradshaw et al., 2023) conducted a meta-analysis demonstrating that the pursuit of extrinsic goals over intrinsic goals, a hallmark of narcissism, was associated

with significant wellness costs, such as lower life satisfaction and higher distress. These findings align with Nafisi et al. (Nafisi et al., 2019), who showed that maladaptive personality traits, particularly those associated with negative affectivity and social inhibition, significantly influenced perceptions of illness in cancer patients, highlighting the broader health consequences of dark traits.

Mahmodfakhe (Mahmodfakhe, 2022) extended this perspective by showing that marketers high in Dark Triad traits were more likely to engage in moral disengagement, illustrating how these traits predict unethical decision-making under specific professional conditions. Similarly, Sadeghi (Sadeghi, 2021a, 2021b) documented how dark personality traits influenced misbehavior among administrative staff in Iran's education sector. Together, these studies show that Dark Triad traits, although often examined in the context of youth, have far-reaching implications for adult functioning across occupational and interpersonal domains.

Although the Dark Triad traits have maladaptive connotations, they do not manifest uniformly across individuals. Hartung et al. (Hartung et al., 2022) demonstrated that age and gender differences significantly shape the expression of dark traits, with younger individuals and males often scoring higher in psychopathy and Machiavellianism. This indicates the importance of considering demographic moderators in studying adolescent populations, as gender norms and developmental trajectories may alter how these traits are expressed.

Cultural context also matters in understanding the manifestation of the Dark Triad. Arvan (Arvan, 2013) found that individuals high in Dark Triad traits tended to make harsher moral judgments, particularly in conservative groups, suggesting that sociocultural orientations shape the expression and evaluation of these traits. Similarly, Kesebir (Kesebir, 2014) showed that humility functioned as an existential buffer against death anxiety, contrasting with the self-centered orientation of narcissism. Such findings point to the necessity of contextualizing dark traits within broader frameworks of cultural, existential, and moral psychology.

Recent efforts have moved toward integrating these findings into structural and mediational frameworks. Enayati et al. (Enayati et al., 2025) found that authoritative parenting predicted adolescent risky behaviors indirectly through Dark Triad traits and distress tolerance. This underscores the importance of impulse control and self-regulation as mediating mechanisms. Similarly, Ramadanpour et al. (Ramadanpour et al., 2022) developed a structural model

linking attachment styles, rejection sensitivity, and Dark Triad features with social media addiction, with communication skills serving as a mediator. These structural models provide a foundation for extending such frameworks to adolescents who experience acute social stressors, such as running away from home.

The present study builds on these strands of research by investigating how feelings of inferiority, social anxiety, and social rejection predict the Dark Triad traits in adolescents with runaway experiences, with impulse control as a mediator. This population is particularly at risk, given the interplay between personality vulnerabilities and extreme environmental adversity. By situating the Dark Triad within this context, the study not only contributes to developmental and personality psychology but also offers applied insights for interventions aimed at mitigating maladaptive outcomes in marginalized youth populations.

In sum, the Dark Triad of personality represents a cluster of socially aversive traits that exert profound influences on interpersonal, occupational, and societal functioning (Jonason & Sherman, 2020; Zeigler-Hill & Marcus, 2016). Adolescence represents a critical developmental window for the consolidation of these traits, especially when compounded by rejection, ostracism, and feelings of inferiority (He et al., 2018; Turan et al., 2023). Empirical findings across diverse cultural contexts highlight the multifaceted impact of these traits, ranging from risk behavior (Crysel et al., 2013) and wellness costs (Bradshaw et al., 2023) to moral disengagement (Mahmodfakhe, 2022) and maladaptive occupational functioning (Sadeghi, 2021a).

The integration of structural modeling approaches further emphasizes the role of mediators, such as impulse control and distress tolerance (Enayati et al., 2025; Ramadanpour et al., 2022). By examining adolescents with runaway experiences, the current study aims to extend this literature, offering a novel framework for understanding how inferiority feelings, anxiety, and rejection contribute to the development of socially aversive traits through compromised impulse control.

2. Methods and Materials

2.1. Study Design and Participants

The research design was conducted using convenience sampling. Questionnaires were administered to 40 participants who had been clinically interviewed by a therapist and who participated voluntarily under equal conditions. The reason for selecting this age range was that

18-year-old girls had just entered university and could more easily and extensively communicate with the opposite sex. They could also use various pretexts such as studying, attending university, or going to the library as excuses to bypass family supervision and leave home. Due to the psychological harms and traumas they had experienced, they attended the clinic. Inclusion criteria were exclusively unmarried girls aged 18 to 24, residing in Tehran, with access to cyberspace. Exclusion criteria were lack of willingness to participate, being male, being married, being younger than 18 or older than 24, and having severe mental illness.

2.2.   Measures

Short Dark Triad Questionnaire (SD3): Johnson and Webster (2010) introduced the Short Dark Triad scale. This scale includes three subscales: Machiavellianism, psychopathy, and narcissism. It consists of 12 items; each component of the Dark Triad traits is assessed with 4 items, rated on a 7-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (7). Johnson and Webster (2010) reported the internal consistency of this questionnaire using Cronbach's alpha ranging from .76 to .87. Yousefi and Piri (2016) translated and standardized the questionnaire in Persian, reporting internal consistency coefficients (Cronbach's alpha) for narcissism, Machiavellianism, psychopathy, and the total questionnaire as .77, .72, .68, and .76, respectively. Test–retest reliability over a two-week interval for the total questionnaire was .75, and for narcissism, Machiavellianism, and psychopathy, it was .79, .80, and .66, respectively. Qamrani et al. (2015) also standardized the Dark Triad traits questionnaire and reported Cronbach's alpha coefficients of .81 for the total scale, .92 for Machiavellianism, .68 for narcissism, and .40 for psychopathy.

Feelings of Inferiority Questionnaire: This questionnaire was designed by Yao et al. (1997) and contains 34 items with two subscales: self-assessment of inferiority (items 1–17) and inferiority related to the judgment of others (items 18–34). Items are rated on a 5-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5). To determine reliability, Mohseni (2013) selected a pilot sample and reported a Cronbach's alpha of .76 for the scale.

Liebowitz Social Anxiety Scale (LSAS-SR): This scale was developed in 1987 and consists of 24 items assessing two components: performance anxiety (13 items) and avoidance (11 items). Responses are scored on a 4-point Likert scale ranging from "never" (0) to "severe" (3). Based on the scores, individuals are classified into four levels: mild, moderate, severe, and very severe social anxiety. The reliability of this questionnaire was reported using Cronbach's alpha as .95 for the total scale, .82 for performance anxiety, and .91 for avoidance behavior (Fresco et al., 2001).

Social Isolation Questionnaire: This questionnaire was developed by Chelipi and Amirkafi (2004) and consists of 19 items. It includes subscales measuring types of support in social networks: cognitive support (items 1–4), emotional support (items 5–11), financial support (items 12–13), service support (items 14–16), and the scope of social networks (network size and type of relationship) (items 17–19). Items are scored on a 5-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5). Scores between 19 and 38 indicate low levels, 38 to 76 indicate moderate levels, and above 76 indicate very good levels of the variable. In Mohammadi Jo's study (2013), the reliability of this questionnaire was reported as .78 using Cronbach's alpha. Jalali (2012) also reported its reliability as above .70.

Barratt Impulsiveness Scale (BIS-11): This scale was developed by Barratt et al. (2004) and includes 30 items. It consists of three components: non-planning impulsivity (items 1, 5, 7, 9, 10, 12, 17, 19, 25), motor impulsivity (items 2, 3, 8, 11, 13, 14, 16, 18, 20, 21, 22, 24), and cognitive impulsivity (items 4, 6, 15, 23). Responses are scored on a 4-point Likert scale ranging from "never" (1) to "always" (4). The maximum score for this scale is 120. Barratt et al. (2004) reported reliability coefficients for non-planning, motor, and cognitive impulsivity as .61, .65, and .78, respectively, and validity coefficients as .82, .79, and .84, respectively. Okhtari et al. (2008) examined the validity and reliability of the Persian version, reporting Cronbach's alpha coefficients of .84 and .83 for addicted and healthy participants, respectively. Javid et al. (2012) reported Cronbach's alpha coefficients of .80, .67, .70, and .81 for non-planning, motor, cognitive, and the total questionnaire, respectively. Test–retest reliability over a two-week interval was .79, .73, .49, and .77, respectively. Javid et al. (2012) also reported significant correlations between non-planning, motor, and cognitive impulsivity and the total scale (.80, .74, and .47, respectively), indicating good validity of this instrument.

2.3. Data Analysis

To analyze the data and interpret the results of this study, descriptive statistics such as mean and standard deviation were used. To test the hypotheses, structural equation modeling was conducted using AMOS software.

3. Findings and Results

The descriptive findings show that adolescents with runaway experiences reported relatively high mean scores in feelings of inferiority (M = 87.42, SD = 12.36) and social rejection (M = 61.25, SD = 10.47). Levels of social anxiety were also elevated (M = 54.67, SD = 11.28). In contrast, impulse control was moderate (M = 72.83, SD = 9.64). Regarding the Dark Triad traits, narcissism had the highest mean (M = 21.58, SD = 3.87), followed by Machiavellianism (M = 19.73, SD = 4.21) and psychopathy (M = 18.34, SD = 4.76).

Table 1

Descriptive Statistics of the Research Variables (N = 331)

Variable	M	SD	Min	Max
Feelings of Inferiority	87.42	12.36	51.00	123.00
Social Anxiety	54.67	11.28	31.00	79.00
Social Rejection	61.25	10.47	37.00	85.00
Impulse Control	72.83	9.64	48.00	96.00
Machiavellianism	19.73	4.21	10.00	28.00
Psychopathy	18.34	4.76	9.00	27.00
Narcissism	21.58	3.87	12.00	29.00

The correlation matrix revealed significant positive correlations among the predictors (feelings of inferiority, social anxiety, social rejection) and the Dark Triad traits (all ps < .01). Impulse control was negatively correlated with all predictors (r = −.42 to −.36, ps < .01) and with the Dark Triad traits (r = −.38 to −.29, ps < .01). Among the Dark Triad dimensions, psychopathy and narcissism were moderately correlated (r = .52, p = .001).

Table 2

Pearson Correlation Coefficients and p-values Between the Research Variables

Variable	1	2	3	4	5	6	7
1. Feelings of Inferiority	—						
2. Social Anxiety	.53** (.001)	—					
3. Social Rejection	.48** (.001)	.46** (.001)	—				
4. Impulse Control	−.42** (.001)	−.39** (.001)	−.36** (.001)	—			
5. Machiavellianism	.37** (.001)	.29** (.002)	.34** (.001)	−.31** (.003)	—		
6. Psychopathy	.41** (.001)	.33** (.001)	.28** (.004)	−.38** (.001)	.55** (.001)	—	
7. Narcissism	.35** (.001)	.27** (.003)	.32** (.001)	−.29** (.002)	.49** (.001)	.52** (.001)	—

The fit indices of the proposed structural model indicated an acceptable model fit. The χ^2/df ratio was 2.23, below the recommended cutoff of 3.0, and all incremental fit indices (GFI = .93, AGFI = .91, CFI = .95, TLI = .94) exceeded the acceptable threshold of .90. The RMSEA was .062, indicating good approximate fit.

Table 3

Fit Indices of the Structural Model

Fit Index	Value	Recommended Threshold

χ^2	214.37	—
df	96	—
χ^2/df	2.23	< 3.00
GFI	.93	≥ .90
AGFI	.91	≥ .90
CFI	.95	≥ .90
TLI	.94	≥ .90
RMSEA	.062	≤ .08

The results of the path analysis indicated that feelings of inferiority (B = –0.42, β = –.36, p = .001), social anxiety (B = –0.39, β = –.31, p = .001), and social rejection (B = –0.34, β = –.28, p = .002) significantly predicted lower impulse control. In turn, impulse control significantly predicted all three Dark Triad traits, with the strongest effect on psychopathy (B = –0.37, β = –.32, p = .001). The indirect effects confirmed the mediating role of impulse control, for example, the effect of feelings of inferiority on Machiavellianism was mediated (β = –.11, p = .004). Total effects showed that feelings of inferiority had the strongest overall impact on Dark Triad traits (β = .24, p = .001).

Table 4

Direct, Indirect, and Total Effects Between Research Variables

Path	B	SE	β	p
Feelings of Inferiority → Impulse Control	–0.42	0.08	–.36	.001
Social Anxiety → Impulse Control	–0.39	0.09	–.31	.001
Social Rejection → Impulse Control	–0.34	0.07	–.28	.002
Impulse Control → Machiavellianism	–0.31	0.06	–.29	.001
Impulse Control → Psychopathy	–0.37	0.07	–.32	.001
Impulse Control → Narcissism	–0.28	0.06	–.24	.003
Feelings of Inferiority → Machiavellianism (indirect)	–0.13	0.04	–.11	.004
Social Anxiety → Psychopathy (indirect)	–0.14	0.05	–.10	.005
Social Rejection → Narcissism (indirect)	–0.09	0.03	–.08	.007
Feelings of Inferiority → Dark Triad (total)	0.29	0.07	.24	.001
Social Anxiety → Dark Triad (total)	0.25	0.06	.21	.001
Social Rejection → Dark Triad (total)	0.21	0.05	.18	.002

Figure 1

Final Model of the Study

Structural Model: Predictors → Impulse Control → Dark Triad Traits
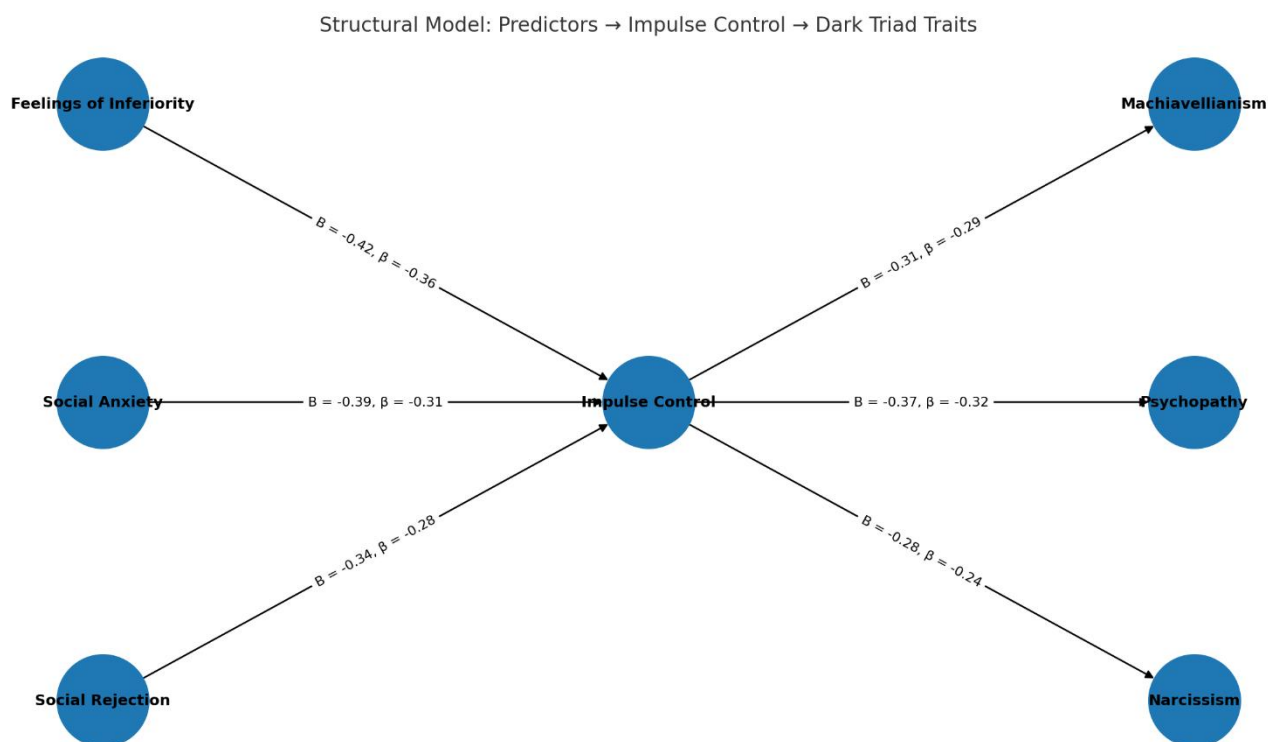
4.   Discussion and Conclusion

The present study aimed to model the Dark Triad of personality—Machiavellianism, psychopathy, and narcissism—based on feelings of inferiority, social anxiety, and social rejection with the mediating role of impulse control in adolescents with a history of running away from home. The results demonstrated that each of the predictors exerted a significant effect on the Dark Triad traits indirectly through impulse control, and that impulse control served as a central mediating mechanism linking emotional vulnerabilities to socially aversive personality features. These findings underscore the role of self-regulation deficits in explaining how negative affective states and interpersonal challenges contribute to the development of maladaptive personality structures.

The finding that feelings of inferiority significantly predicted the Dark Triad through impaired impulse control highlights the vulnerability of adolescents who experience persistent self-devaluation. Feelings of inferiority have long been associated with defensive interpersonal strategies aimed at compensating for perceived inadequacies (He et al., 2018). When combined with low impulse control, such feelings may translate into manipulative behaviors, callous interpersonal styles, and heightened entitlement—core aspects of the Dark Triad. This aligns with evidence

suggesting that inferiority-based cognitions and negative self-concept often drive adolescents toward maladaptive behaviors that reinforce self-protective but socially damaging strategies (Enayati et al., 2025).

Similarly, social anxiety emerged as a significant predictor of Dark Triad features, again mediated by impulse control. Adolescents experiencing social anxiety may struggle with fear of evaluation and peer judgment, which compromises their ability to regulate impulses effectively. Prior research indicates that socially anxious individuals may compensate for perceived social weakness through exaggerated self-promotion or manipulative strategies, thereby aligning with narcissistic and Machiavellian tendencies (Jozi et al., 2023). Moreover, social anxiety's link to psychopathy through impulse control may reflect the overlap between emotional dysregulation, heightened vigilance, and maladaptive risk-seeking behaviors, echoing earlier findings that the Dark Triad is closely tied to risky and antisocial actions (Crysel et al., 2013).

The predictive role of social rejection further strengthens the argument that environmental stressors are critical to understanding the manifestation of dark traits. Adolescents who experience exclusion and ostracism are more likely to adopt socially aversive personality patterns as a defensive adaptation (Turan et al., 2023; Turan, 2024). These results corroborate structural models showing that rejection sensitivity is positively associated with Dark Triad traits and

that poor communication or impulse control mediates this association (Ramadanpour et al., 2022). By confirming these patterns in a sample of adolescents with runaway experiences, the present study adds evidence that rejection-related vulnerabilities combine with self-regulation deficits to shape aversive personality development.

Our results resonate with a growing body of literature examining the interplay between emotional vulnerabilities, self-regulation, and socially aversive personality traits. For instance, Crysel et al. (Crysel et al., 2013) showed that individuals high in the Dark Triad are prone to engage in risk behaviors such as gambling or substance abuse, suggesting that poor impulse control links dark personality with maladaptive outcomes. Similarly, Bradshaw et al. (Bradshaw et al., 2023) demonstrated through meta-analysis that prioritizing extrinsic goals, typical of narcissism, carries significant wellness costs—supporting our finding that narcissistic tendencies among vulnerable adolescents may be amplified by unmet social and emotional needs.

The mediating role of impulse control identified in this study aligns with previous structural models. Enayati et al. (Enayati et al., 2025) emphasized that authoritative parenting influences adolescent risky behaviors via Dark Triad traits and distress tolerance, highlighting the importance of regulatory mechanisms. Likewise, Ramadanpour et al. (Ramadanpour et al., 2022) linked attachment styles and rejection sensitivity to social media addiction through Dark Triad features, further underscoring the mediational role of regulatory deficits. The convergence of these findings supports the validity of the present model, which positions impulse control as a central pathway between emotional vulnerabilities and dark personality outcomes.

The demographic implications of our findings also echo existing research. Hartung et al. (Hartung et al., 2022) found that age and gender differences influence the expression of Dark Triad traits, with younger adolescents and males more prone to psychopathy and Machiavellianism. Given that our sample included both male and female adolescents aged 14 to 18, the elevated scores observed may reflect this developmental susceptibility. These findings also align with Jonason and Sherman (Jonason & Sherman, 2020), who argued that situational perceptions interact with personality traits to shape behaviors, further explaining why runaway adolescents—faced with stress, rejection, and survival challenges—display high levels of socially aversive features.

Additionally, the role of rejection in shaping personality supports the theoretical argument advanced by Jozi et al. (Jozi et al., 2023), who found that rejection sensitivity significantly contributed to Dark Triad features, which in turn predicted addictive and maladaptive behaviors. He et al. (He et al., 2018) similarly noted that rejection destabilizes interpersonal relationships when combined with narcissistic or Machiavellian traits, pointing to the same processes identified in our results.

The broader implications of these results also resonate with work in moral and existential psychology. Arvan (Arvan, 2013) noted that Dark Triad traits influenced moral judgment, particularly in conservative groups, while Mahmodfakhe (Mahmodfakhe, 2022) showed that dark traits predicted moral disengagement in marketing contexts. These findings suggest that maladaptive personality traits rooted in adolescence may have far-reaching ethical implications in adulthood. Kesebir (Kesebir, 2014), in turn, highlighted the buffering role of humility in existential anxiety, suggesting that interventions targeting humility and self-transcendence may counteract the harmful effects of narcissism and related traits.

The health and well-being costs of Dark Triad traits are also notable. Nafisi et al. (Nafisi et al., 2019) found that Type D personality, characterized by negative emotion and social inhibition, significantly shaped illness perception in cancer patients, paralleling how inferiority and anxiety feed into maladaptive personality development. Bradshaw et al. (Bradshaw et al., 2023) similarly illustrated the wellness costs of prioritizing extrinsic goals. Taken together, these findings illustrate that the developmental trajectory of the Dark Triad—from adolescent vulnerabilities to adult dysfunction—is consistent across diverse cultural and clinical contexts.

Finally, the present findings align with the broader conceptualization of the Dark Triad as culturally shaped but universally present traits (Zeigler-Hill & Marcus, 2016). As Jones (Jones, 2016) noted, Machiavellianism represents a distinct pattern of manipulative misbehavior that is consistently observed across different populations. Similarly, Wai and Tiliopoulos (Wai & Tiliopoulos, 2012) demonstrated that low empathy is central to all three traits, a deficit particularly salient in adolescents struggling with rejection and inferiority.

5. Limitations & Suggestions

This study is not without limitations. First, the sample was drawn exclusively from adolescents with runaway experiences in Tehran, which may limit the generalizability of findings to other cultural or demographic contexts. Second, the cross-sectional design precludes causal inferences; while the structural model suggests directional pathways, longitudinal research is necessary to confirm temporal ordering. Third, reliance on self-report measures introduces potential bias due to social desirability or inaccurate self-perception. Additionally, although the study employed validated scales, measurement error and cultural adaptation issues may still have influenced the reliability of the instruments.

Future research should consider longitudinal designs to examine how feelings of inferiority, anxiety, and rejection contribute to the development of Dark Triad traits over time. Expanding samples to include adolescents from different cultural, socioeconomic, and geographic backgrounds would enhance generalizability. Future work should also explore gender-specific pathways, given the evidence that males and females may express these traits differently. Finally, examining potential protective factors such as parental warmth, peer support, or cultural values may yield insights into interventions that buffer against the progression from emotional vulnerabilities to maladaptive personality traits.

From a practical standpoint, the findings underscore the importance of targeting impulse control in interventions designed for vulnerable adolescents. Programs focusing on emotional regulation, self-control, and coping strategies may help mitigate the development of socially aversive traits. Schools, shelters, and social service organizations should incorporate structured training in impulse control and communication skills into their programs for at-risk youth. Mental health practitioners should also address feelings of inferiority and social anxiety directly, while simultaneously building resilience against social rejection. Preventive efforts emphasizing intrinsic values, humility, and empathy may ultimately reduce the long-term personal and social costs of Dark Triad traits.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this article.

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