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Examining the Mediating Role of Perceived Social Support in the Association between Dark Quadrant Personality Traits and Delinquent Behaviors among Adolescents: A Cross-Sectional Study

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ABSTRACT

Background: The relationships with family, society, and individual psychological conditions play an essential role in juvenile delinquency. This study aimed to examine the mediating role of perceived social support in the association between dark quartet personality traits and delinquency in adolescents.

Methods: The present study employed a descriptive correlational design. The statistical population consisted of adolescents aged 13 to 18 years. From this population, 451 participants were selected through convenience sampling method as the study sample. Data were collected using the Dark Tetrad Personality Traits Questionnaire, the Multidimensional Scale of Perceived Social Support, and the Delinquent Behavior Questionnaire. Structural equation modeling (SEM) was also used to examine the relationships between the study variables. Both the measurement model and the structural model were evaluated using path coefficients, factor loadings, and significance levels with LISREL 8.8 software.

Results: The findings indicated that Dark Tetrad traits had a significant positive direct effect on delinquency ($\beta = 0.891$, $P < 0.05$). Additionally, these traits showed a significant negative effect on perceived social support ($\beta = -0.706$, $P < 0.05$). However, the direct path from perceived social support to delinquency was not statistically significant ($P > 0.05$).

Conclusion: The findings suggest that Dark Tetrad personality traits play a more prominent role in explaining delinquency than perceived social support. In addition to directly increasing the likelihood of delinquent behaviors, these traits may also undermine interpersonal relationships and social support resources. These results highlight the importance of considering personality-related risk factors when designing prevention and intervention programs targeting delinquent behavior.

Keywords: Personality, Delinquency, Perceived Social Support

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Introduction

Adolescence is marked by changes in the neuroendocrine system that underlie shifts in individuals' emotional and social well-being. During this developmental period, adolescents become vulnerable to various risks, including behavioral problems such as delinquency (Sekar & Bhuvaneswari, 2026). Adolescent delinquency includes behaviors such as aggression, substance use, vandalism, and other violations that threaten the well-being of young individuals and the safety of their communities (Manouchehri et al., 2025). Juvenile delinquent behaviors represent one of the major challenges faced by contemporary societies, with substantial implications at individual, familial, and broader social levels (Aazami et al., 2023). Understanding the psychological factors that contribute to the emergence of such behaviors is therefore crucial, as it provides a foundation for developing targeted preventive and intervention strategies. Increasingly, research has highlighted the role of personality traits—particularly those conceptualized within the Dark Tetrad framework—in predisposing adolescents to antisocial and delinquent tendencies (Brewer, 2023).

The Dark Tetrad encompasses four socially aversive yet non-clinical traits: Machiavellianism, narcissism, psychopathy, and sadism. These traits do not reach the severity required for clinical diagnosis; instead, they reflect milder, subclinical manifestations of maladaptive personality characteristics. A central feature of these traits is their interpersonal and social unpleasantness, which may emerge across everyday environments including family settings, academic contexts, and the workplace (Momtazi et al., 2024). Despite their subclinical nature, the Dark Tetrad traits are consistently associated with increased likelihood of rule-breaking, aggression, and other forms of antisocial behavior, making them relevant predictors of juvenile delinquency. Among these traits, narcissism is characterized by excessive self-admiration, self-centeredness, and an inflated sense of self-importance. Adolescents high in narcissistic traits tend to display a heightened sense of superiority and a persistent need for external validation, factors that can increase their susceptibility to interpersonal conflict and deviant behavior (Grapsas et al., 2020).

Individuals high in narcissistic traits tend to exaggerate their own worth and significance, displaying an overt sense of superiority while simultaneously exploiting others for personal gain. Such individuals demonstrate excessive arrogance and an intense, persistent desire for attention; however, they often experience a paradoxical sense of not fully deserving the admiration they seek (Qaderi Bagajan et al., 2024). Machiavellianism is characterized by emotional detachment, callousness, and a tendency to manipulate and exploit others; individuals with this trait typically adopt a strategic and opportunistic approach that prioritizes personal gain (Schreiber & Marcus, 2020). Psychopathy, in contrast, is commonly associated with impulsivity, sensation seeking, antisocial behavior, low empathy, and a lack of remorse or guilt (Furnham et al., 2013). Together with narcissism, these traits are collectively referred to as the Dark Triad (Paulhus& Williams, 2002).

The fourth component, sadism, refers to deriving pleasure from inflicting harm on others or witnessing others being harmed; this tendency may manifest in both psychological and behavioral forms (Chabrol et al., 2009). With the inclusion of sadism, the conceptual framework expands from the Dark Triad to the Dark Tetrad, encompassing four socially aversive personality traits associated with manipulative and antagonistic interpersonal styles.

These traits can be understood as dispositional conditions that facilitate engagement in self-serving and antisocial strategies in pursuit of personal goals within both professional and interpersonal domains (Koehn et al., 2019). Despite their relatively distinct characteristics, previous research suggests that the Dark Triad traits share a common underlying core, often

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referred to as the dark core, which is characterized by low self-control, high impulsivity, aggression, and manipulativeness (Scardera et al., 2020).

This underlying dark core may predispose adolescents who exhibit elevated levels of Dark Triad traits to engage in higher levels of risky and maladaptive behaviors. Consistent with this perspective, empirical studies have demonstrated that dark personality traits are strong predictors of risky and socially maladaptive behaviors during adolescence and are associated with an increased likelihood of engaging in harmful or delinquent actions (Hayes et al., 2021). A number of studies—including those conducted by (Crysel et al.,2013; Verona et al., 2012; Harrison et al., 2018)—have examined the association between dark personality traits and risky or delinquent behaviors. However, the potential role of mediating environmental factors, such as perceived social support, needs more attention.

Perceived social support refers to an individual's cognitive assessment of the availability of care and assistance in their social relationships. This support is typically reflected through various forms of support, including emotional support (e.g., expressions of empathy and understanding), instrumental support (e.g., assistance with practical tasks), and informational support (e.g., guidance or advice), which may be provided by a variety of sources, such as family members, friends, or significant others (Harrison et al., 2018). Although family support is one of the most important forms of social support, it has been argued that adolescents often spend a greater portion of their time under the influence, supervision, and support of peers and friends (Kiesner et al., 2010). More broadly, perceived social support reflects an individual's belief in being valued, cared for, and connected to a supportive social network. This sense of connectedness plays a protective role in psychological well-being and has been shown to reduce the risk of severe maladaptive outcomes such as delinquent behaviors (Sekar & Bhuvaneswari, 2026; Scardera et al., 2020).

Several studies have documented the positive effects of social support on various dimensions of adolescent well-being. Although effect sizes are typically small, measures of social support—particularly perceived social support—have been associated with a wide range of positive outcomes for youth, including academic achievement, health (e.g., exercise frequency and dietary habits), self-esteem, development of effective coping skills, and avoidance of substance use and other problematic behaviors (Chu et al., 2018) .Research has shown that social support, as a critical resource for reducing psychological distress and strengthening adolescents' coping capacities, can reduce or modify the negative impact of dark personality traits on the emergence of delinquent behaviors. Conversely, the lack of adequate social support may create conditions that exacerbate the harmful effects of these characteristics (Rahmani & Rahimi, 2025). While most of the research projects focus on the positive effects of social support regarding adolescent development, based on (Cullen's ,1994) integrated theory of coercion and social support, the ultimate impact of social support on deviant behavior depends on the source of social support. Social support reinforces a sense of moral obligation and commitment to the provider of social support. Also, under certain circumstances, social support can increase crime and delinquency, namely when social support comes from deviant or unconventional sources. When the source of social support involves an "illegitimate" source such as a delinquent gang or peer group, the resulting sense of obligation and commitment is likely to be directed toward members of the delinquent group, potentially encouraging future criminal activity (Colvin, 2007).

While most studies focus on the positive effects of social support on adolescent development, some suggest that among adolescents who are associated with delinquent peers, peer social support relates to increased delinquent behavior. These findings highlight the potential "dark side" of social support (Brezina & Azimi, 2018). These results suggest that the role and mode of mediation of perceived

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social support in the relationship between dark quadrant personality traits and delinquent behavior is still unclear. Furthermore, previous studies have mainly focused on the moderating role of social support, while its mediating role, especially in the Iranian adolescent population, has been less explored. To date, few studies have examined these variables simultaneously using structural equation modeling. Therefore, the present study aimed to investigate the mediating role of perceived social support in the relationship between the dark quartet personality traits and delinquent behavior of Iranian adolescents. Such research can contribute to a deeper understanding of how personality traits are related to environmental factors, while also providing practical insights for developing effective prevention and intervention strategies aimed at reducing delinquency among adolescents.

Method

This study is a descriptive correlational study. The study seeks to examine the relationship between the dark quartet personality traits (predictor variable), delinquent behaviors (criterion variable), and the mediating role of perceived social support (mediator variable) among adolescents. The statistical population of this study consists of all adolescent boys and girls between the ages of 13 and 18 who visited the counseling center in the city of [Torbat Heydariyeh] during the academic year 1403-1404. The sample size used in this study included 451 eligible adolescents who were selected using convenience sampling. The sample selection criteria included having a specified age range and visiting the counseling center during a specified time period. Also, adolescents who were diagnosed with severe psychotic disorders or mental retardation based on the initial assessment of the center were excluded from the study sample. Following institutional approval, written informed consent was obtained from all the participants. Data were collected in group administration sessions conducted at the counseling center. Participants were informed about the voluntary nature of the study, assured of anonymity and confidentiality, and instructed to respond honestly to all items. All questionnaires were self-administered in a quiet room under the supervision of a psychologist researcher.

Short Dark Tetrad (SD4)

Dark personality traits were measured using the 21-item Short Dark Tetrad (SD4) developed by (Paulhus & Williams, 2002). This instrument assesses four socially aversive personality traits: Machiavellianism, narcissism, psychopathy, and sadism. Machiavellianism includes: manipulativeness, cynical relational beliefs, and prioritization of personal gain; Narcissism includes grandiosity, entitlement, and a strong need for admiration; Psychopathy includes impulsivity, emotional coldness, low empathy, and antisocial tendencies; and sadism includes: deriving pleasure from observing or inflicting psychological or physical discomfort. Items are rated on a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree). Moreover, subscale scores are computed by averaging their respective items, with higher scores indicating stronger trait expression (Paulhus & Williams, 2002) confirmed the four-factor structure using CFA. In Iranian samples, construct validity has been replicated, and the model demonstrates good fit (Yousefi & Imanzad, 2018). Test–retest reliability ranges between 0.76 and 0.84, and internal consistency coefficients vary between 0.68 and 0.88 (Yousefi & Imanzad, 2018). In the present study, Cronbach's alpha was calculated to be 0.70.

Multidimensional Scale of Perceived Social Support (MSPSS)

Perceived social support was assessed using the 12-item MSPSS developed by (Zimet et al.,1988). The scale measures perceived support from family, friends, and significant others. Items assess subjective beliefs regarding the availability of emotional and instrumental support. (Zimet et al., 1988). Confirmed the three-factor structure, reporting Cronbach's alpha coefficients of 0.93 (total), 0.89 (family), 0.98 (friends), and 0.94 (significant others). In an Iranian validation study,

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alpha coefficients of 0.89 (total), 0.84 (family), and 0.85 (friends/significant others) were reported, which indicated strong reliability. In the present study, Cronbach's alpha was calculated to be 0.70. In this study, Cronbach's alpha was 0.65

Adolescent Delinquency Self-Report Questionnaire

Adolescent delinquency was measured using the 19-item self-report delinquency questionnaire developed by Ayati (2014). The instrument assesses five dimensions of delinquent behavior: family economic conditions, deviant peer association, family religious commitment, leisure-time management, and social/familial conditions. Items are rated on a 5-point Likert scale, with higher scores indicating higher involvement in delinquent behaviors. Content and face validity were established through expert review. In addition, reliability testing conducted on a pilot sample of adolescents yielded a Cronbach's alpha of 0.76, exceeding the acceptable threshold of 0.70, which demonstrated adequate internal consistency (McGrath, 1995). In the present study, Cronbach's alpha was calculated to be 0.75.

Data Analysis

Data were analyzed using SPSS (Version 27) and LISREL (Version 8.8). Descriptive statistics (means and standard deviations) were computed for all variables. Lso, Pearson's correlation coefficients were used to examine bivariate associations. Structural equation modeling (SEM) and path analysis were conducted to test the proposed conceptual model. Model fit was then evaluated using standard indices, including CFI, TLI, RMSEA, and χ^2/df.

Results

The present study was conducted on 451 adolescents aged 13 to 18 years. Of the total sample, 68% were boys and 32% were girls. Regarding the economic status of families, 65% of adolescents reported having parents with stable employment, whereas 35% had parents without a fixed occupation. Participants in the second cycle of high school were primarily enrolled in the technical–vocational, humanities, or experimental sciences tracks.

The primary hypothesis of the study proposed that there is a significant relationship between Dark Tetrad personality traits and adolescent delinquent behaviors, and that perceived social support acts as a mediating variable in this association. Before testing the SEM, statistical assumptions, including multicollinearity and independence of errors, were evaluated. Results indicated that the tolerance index for all predictor variables was less than 0.79, and the variance inflation factor (VIF) values were below 3.9. Moreover, the Durbin–Watson coefficient, used to examine the independence of residuals, was 2.18. Because tolerance values less than 1, VIF values lower than 10, and Durbin–Watson values below 4 indicate that regression assumptions are met, the obtained indices collectively confirmed that the data satisfied the prerequisites for conducting SEM analyses.

Accordingly, the proposed model was tested using SEM. Results showed that the model fit indices provided evidence of an overall good fit (Figures 1 and 2). To evaluate model fit, several standard indices were applied, including:

1. Chi-square to degrees of freedom ratio (χ^2/df)
2. Bentler–Bonett Normed Fit Index (NFI) and Tucker–Lewis Index (TLI/NNFI)
3. Root Mean Square Error of Approximation (RMSEA)
4. Additional indices, including RMR, GFI, AGFI, and CFI

Collectively, these indicators demonstrated that the structural model adequately represented the relationships among the study variables.

As shown in Table 1, the ratio of chi-square to degrees of freedom (χ^2/df) was less than 5, indicating an acceptable model fit. Additionally, the goodness-of-fit indices demonstrated satisfactory values. Specifically, the Goodness-of-Fit Index (GFI) was 0.94, and the Adjusted Goodness-of-Fit Index (AGFI) was 0.89. The Normed Fit Index (NFI) and Non-Normed Fit Index (NNFI) were both 0.96, further suggesting that the proposed model fits the data well (Table 1).

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Table1. Goodness-of-Fit Indices

Model	NNFI	CFI	NFI	AGFI	GFI	RMSEA	χ2/df	Df	χ 2
Three-Factor	0/96	0/97	0/96	0/89	0/94	0/083	4/11	43	176/81

Furthermore, the Root Mean Square Error of Approximation (RMSEA) was 0.083, which indicates an acceptable level of model fit. Overall, the obtained fit indices support the adequacy of the structural model, and the proposed relationships among the study variables were confirmed ($p < .01$).

As illustrated in figures 1 and , each hypothesized causal path is associated with a γ or β coefficient and a corresponding t statistic. The γ coefficient from the Dark Tetrad traits to delinquency was 0.89, reflecting a strong and positive effect. The t test confirmed that this path was statistically significant ($t = 18.03$, $p < .05$). The γ coefficient from the Dark Tetrad traits to perceived social support was –0.70, indicating a strong negative relationship. The associated t value demonstrated that this effect was also statistically significant ($t = –15.52$, $p < .05$) (Figure 1).

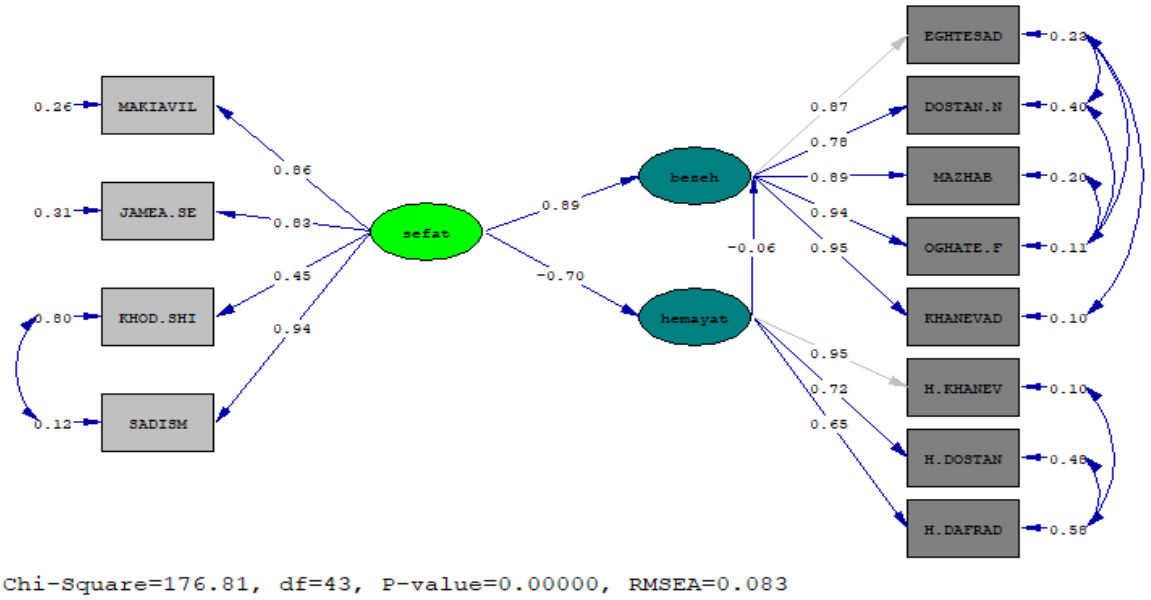


Figure 1. Direct Effects and Path Coefficients in the Proposed Model

For the latent construct of perceived social support, the highest λy loading was associated with family support, indicating that this component most strongly represents the social support construct. Accordingly, family support was considered the reference indicator for the social support variable. The other components—friends' support and support from significant others—also showed acceptable factor loadings, although their magnitudes were lower than that of family support. Furthermore, all λx coefficients associated with the Dark Tetrad traits showed relatively high values, and the t-tests indicated that all loadings were statistically significant. Among these indicators, sadism exhibited the highest λx loading, suggesting that it has the strongest contribution to the latent construct of Dark Tetrad traits. The other traits—Machiavellianism, psychopathy, and narcissism—also showed satisfactory loadings, although their values were somewhat lower than that of sadism (figure 2).

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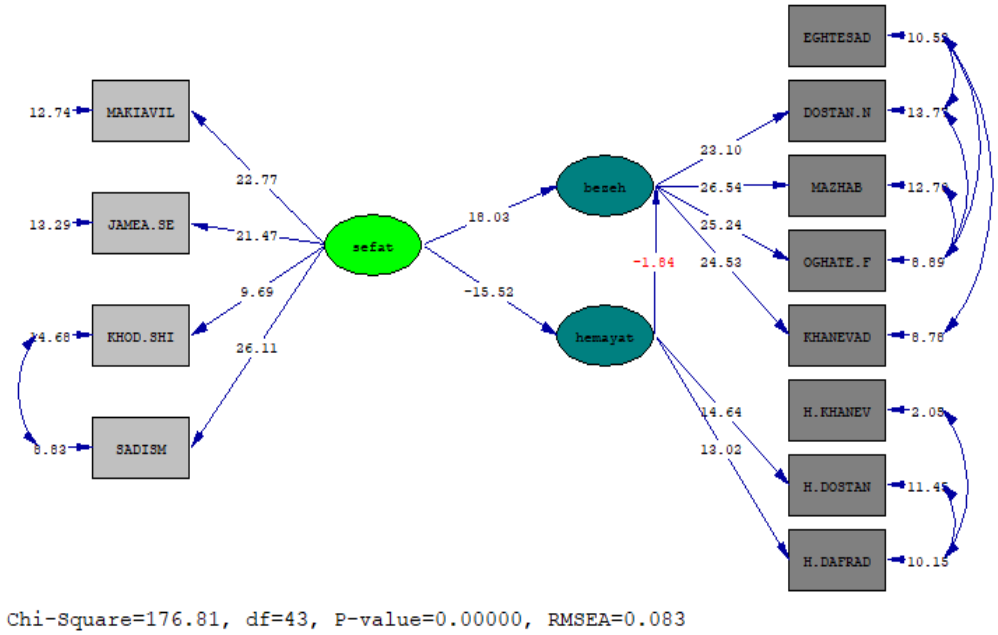


Figure 2. Significance of Path Coefficients in the Proposed Model

In SEM, the reported indices are not limited to global model-fit statistics; rather, the model also provides standardized path coefficients (β and γ) along with their corresponding t values for each causal pathway. These coefficients quantify the relative strength of direct effects from the exogenous Dark Tetrad traits to the endogenous variables (delinquent behavior and perceived social support)—represented by γ—and from the mediator (perceived social support) to delinquency—represented by β. Because these parameters are standardized regression coefficients, their values range between 0 and 1 in absolute magnitude, indicating the relative contribution of each predictor.

Finally, the β coefficient from perceived social support to delinquency was –0.06, representing a small negative effect. The t-test, however, indicated that this path was not statistically significant ($t = -1.84$, $p > .05$). Overall, these standardized path coefficients and their significance levels reveal that while Dark Tetrad traits exert strong direct effects on both delinquency and perceived social support; the mediating pathway through social support does not reach statistical significance.

In addition to examining the overall model fit indices and the standardized gamma (γ) and beta (β) path coefficients, evaluating the factor loadings (λ) is also essential in SEM. As observed in the model, all λy coefficients demonstrated relatively high values, indicating that the observed indicators adequately represent their respective latent constructs. The t-tests further confirmed that all estimated coefficients were statistically significant. Within the latent construct of delinquency, the indicator family showed the highest factor loading (λy), indicating the strongest association with the delinquency construct. Other indicators, including leisure time, family religiosity, family economic status, and deviant peers, also demonstrated acceptable factor loadings, although their magnitudes were somewhat lower compared with the family component. Among these indicators, family economic status was treated as the reference indicator (scale indicator) for the delinquency construct due to its theoretical proximity to the concept.

Overall, the results indicate that the proposed structural model demonstrates a satisfactory level of fit. The γ path coefficients were statistically significant across all hypothesized direct paths. However, the β coefficient from perceived social support to delinquency was not statistically

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significant.

These findings suggest that the direct causal pathways specified in the overall model were supported, whereas the indirect pathway through perceived social support was not confirmed. Furthermore, the factor loadings (λy and λx) indicated that the observed variables adequately represent their respective constructs, effectively reducing the observed indicators into meaningful latent variables within the measurement model.

Discussion

The present study aimed to examine the mediating role of social support in the relationship between dark quartet personality traits and delinquent behaviors among adolescents. The findings indicated that the Dark Tetrad traits exert a significant and positive direct effect on delinquency, while simultaneously being associated with a reduction in perceived social support. However, social support did not directly predict delinquency. This pattern suggests that, in explaining delinquent behaviors, stable personality dispositions play a more prominent role than certain social contextual variables.

From a theoretical perspective, these results are consistent with the contemporary literature on personality and antisocial behavior, which highlights that dark personality features—including narcissism, Machiavellianism, psychopathy, and sadism—are linked to reduced empathy, heightened interpersonal exploitation, destructive sensation-seeking, and a tendency to violate social norms (ZHU & JIN, 2021). Individuals high on these traits often perceive moral and social rules not as binding principles but rather as obstacles to achieving personal goals. As a result, they are more prone to aggressive, deceptive, and norm-violating behaviors (Vize et al., 2018).

Among the components of the Dark Tetrad, the prominent role of sadism in the present model is particularly noteworthy. Recent research has shown that sadism—especially when accompanied by enjoyment derived from others' suffering—constitutes one of the strongest predictors of harmful and aggressive behaviors (Jones & Paulhus, 2014). This finding is consistent with the interpretation that some forms of delinquency are not merely the result of weak impulse control or environmental pressures; rather, they may stem from stable tendencies involving pleasure in domination, destruction, and the humiliation of others. Accordingly, the strong loading of sadism in the present measurement model may indicate that the Dark Tetrad construct within the studied sample is primarily organized around interpersonal harm-related components. This result is also consistent with recent meta-analytic evidence, suggesting that meaningful differences exist among dark personality components and that not all dimensions of dark personality are equally associated with antisocial behavior (Muris et al., 2017).

Another important finding of this study was the significant negative association between Dark Tetrad traits and perceived social support. This result can be interpreted in light of the interpersonal dynamics characteristic of these traits. Individuals with higher levels of dark traits tend to rely on instrumental, manipulative, controlling, and dominance-oriented strategies in their interpersonal relationships. Although such interaction styles may appear advantageous in the short term, they tend to erode interpersonal trust and weaken supportive bonds over time (Moor & Anderson, 2019). Recent studies have likewise demonstrated that dark personality traits are associated with lower-quality intimate relationships, higher levels of interpersonal conflict, lower relationship satisfaction, and more restricted social networks (Vize et al., 2018). Consequently, reduced social support among individuals high in dark traits is unlikely to be a random outcome; rather, it represents a direct consequence of their maladaptive interpersonal interaction patterns. In other words, dark personality traits may undermine the quality of relationships and reduce individuals' reliability for others, thereby limiting the availability of supportive social resources.

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In contrast, the non-significant direct path from social support to delinquency indicates that, within the present sample, social support did not provide a sufficiently strong or direct protective effect against delinquent behavior. This finding is not necessarily inconsistent with the broader social-support literature; rather, it suggests that the influence of social support may be more indirect or conditional, rather than functioning as a straightforward direct predictor. In many recent studies, social support has been conceptualized as a mediator, rather than a direct antecedent of delinquency (Alsubaie et al., 2018).

This pattern becomes especially plausible when stable and powerful personality traits are included in predictive models. Under such conditions, the effects of environmental variables often become attenuated, as delinquent behavior tends to be driven more by underlying personality structures and motivational tendencies than by the availability of supportive resources (Rueger et al., 2016). Therefore, the non-significance of this path in the present study likely reflects that, in the presence of Dark Tetrad traits, social support alone is insufficient to counteract or suppress delinquent tendencies.

From a methodological perspective, the results of the measurement model also support the relative adequacy of the instruments used in the study. The significance and appropriate magnitude of the factor loadings indicate that the indicators successfully represented their corresponding latent constructs. In the present model, the higher factor loadings of certain indicators—particularly within the Dark Tetrad and social support constructs—suggest that these components contributed most strongly to defining their respective latent variables. This pattern aligns with the fact that some subcomponents possess greater explanatory power and play a central role in shaping the overall construct. Contemporary SEM literature likewise emphasizes that the accurate interpretation of factor loadings and structural paths is essential for assessing construct validity and deriving sound theoretical inferences (Sarstedt et al., 2021).

Conclusion

The findings of this study carry important implications for prevention and intervention. If Dark Tetrad traits function as major risk factors for delinquency, preventive programs should not only focus on enhancing social skills and strengthening family support but also prioritize the early identification of maladaptive personality patterns. Interventions targeting increase in empathy, emotion regulation, moral responsibility, and reductions in dominance-oriented or exploitative behaviors may help mitigate the risk of delinquent behaviors. Conversely, although social support did not exhibit a significant direct effect in the present model, it remains an important variable from a preventive standpoint. Social support may contribute indirectly to reducing delinquency by improving psychological adjustment, enhancing social monitoring, and decreasing interpersonal isolation.

Taken together, the findings of this research indicate that Dark Tetrad traits—particularly interpersonal harm-oriented components—play a central role in predicting delinquency, while simultaneously being associated with reduced social support. However, social support did not directly explain delinquency, suggesting that in the examined sample, personality-based influences outweighed environmental factors. This pattern is consistent with emerging scientific literature in personality psychology and criminology, highlighting that a comprehensive understanding of delinquency requires simultaneous attention to the interaction between personality characteristics, interpersonal processes, and supportive resources.

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Conflict of Interest

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Ethical considerations

This study was approved by Committee of the Islamic Azad University of Neyshabur under the code: IR.IAU.NEYSHABUR.REC.1405.046. Prior to participation, confidentiality and voluntary nature were explained, and written informed consent was.

Code of Ethics

IR.IAU.NEYSHABUR.REC.1405.046

Authors' Contributions

First author did onceptualization and research design; and the second autgor, did data collection and design implementation.all the authors did the final approval.

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