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Validation Syndrome: The Root of Deception and Developmental Predictors of Dark Triad Traits in Adolescents for Forensic and Developmental Psychology

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Abstract

This study examines the early developmental predictors of Dark Triad traits, narcissism, machiavellianism, and psychopathy in adolescents using a mixed-methods approach grounded in the Validation Syndrome Diagnostic Triangle (VSDT) framework. The VSDT posits that self-doubt, desire, and self-gratification interact with environmental and familial influences to shape personality traits. Data from the Add Health Longitudinal Study (N = 15,000 adolescents, aged 12–18) were analyzed using Pearson correlations, multiple regression, and thematic analysis. Findings indicate that familial conflict and socioeconomic stress strongly predict Dark Triad tendencies, particularly self-doubt ($r = .953$, $p < .05$), self-gratification ($r = .898$, $p < .05$), and desire ($r = .812$, $p < .05$). Conversely, parental monitoring demonstrated a protective effect, negatively correlating with self-doubt ($\beta = -0.008$, $p < .05$) and self-gratification ($\beta = 0.269$, $p < .05$). Regression analysis identified familial conflict as the strongest predictor of maladaptive traits ($\beta = 0.158$, $p < .001$), accounting for 92.68% of the variance in self-doubt ($R^2 = .927$). Thematic analysis corroborated these findings, linking Dark Triad traits to validation-seeking behaviors in adverse familial environments. Adolescents with high Dark Triad tendencies engaged in cyberbullying and manipulative online behaviors, while supportive environments and parental monitoring fostered resilience. These findings validate the VSDT framework, emphasizing the role of familial and environmental factors in adolescent personality development. The findings have implications for forensic cyberpsychology, examining how online interactions shape developmental patterns and influence digital deception. The study provides actionable insights for early interventions to mitigate antisocial behavior. Future research should explore cross-cultural interventions to support healthier adolescent development.

Keywords: Antisocial Personality Behavior, Validation Syndrome, Forensic Cyberpsychology, Dark Triad, Socioeconomic Stress, Parenting, Familial factors, Light Triad

1. Introduction

1.1 Background and Context

Adolescence is a pivotal stage of personality development, where environmental, familial, and psychological factors converge to shape enduring behavioral patterns [1]-[3]. Among these patterns, the Dark Triad traits,narcissism, machiavellianism, and psychopathy, have garnered significant attention due to their association with manipulative behaviors, lack of empathy, and antisocial tendencies. These traits, while potentially adaptive in resource-scarce or high-stress environments, often lead to detrimental outcomes such as deception, criminality, and social deviance when left unchecked [4],[5]. Research highlights that adolescents exposed to familial conflict, socioeconomic pressures, and inadequate parental involvement are particularly vulnerable to developing maladaptive traits [6]. These individuals often adopt deceitful behaviors as coping mechanisms, seeking validation through manipulation and external approval [7]. Understanding the origins and developmental predictors of the Dark Triad is crucial to informing early interventions that mitigate these tendencies, promoting prosocial outcomes and reducing societal instability.

2. Problem Statement

Antisocial personality development among adolescents has emerged as a significant societal concern, with measurable increases in maladaptive behaviors. Recent statistics reveal that 20-30% of adolescents worldwide exhibit antisocial tendencies, including manipulative and delinquent behaviors, contributing to rising rates of youth

violence and criminal activity [8],[9]. In the United States, juvenile crime accounts for nearly 15% of all arrests, with a notable rise in cyberbullying and peer exploitation behaviors over the past five years [10],[11].

The general problem is that antisocial personality development during adolescence exacerbates societal instability through escalating delinquency, violence, and mental health challenges [12]. The specific problem is the lack of comprehensive early detection tools and intervention strategies that address the interplay between psychological and environmental factors influencing antisocial personality traits [13]. Building on forensic cyberpsychology, this research addresses the gap in understanding how dark personality traits manifest in both physical and virtual environments. Forensic cyberpsychology provides a theoretical basis for identifying traits that increase the risk of cybercrime among adolescents, particularly those predisposed to antisocial behaviors [14]. This gap leaves educators, clinicians, and policymakers under-equipped to mitigate these behaviors effectively [15],[9].

3. Purpose of the Study

The purpose of this mixed-methods study is to investigate the early developmental predictors of Dark Triad traits among adolescents. Specifically, it examines the interplay between psychological drivers (self-doubt, desire, and self-gratification) and environmental factors (familial conflict, socioeconomic stress, and parental monitoring). By identifying both risk and protective factors, this research aims to provide actionable insights for professionals, including educators, clinicians, and policymakers. These insights will inform evidence-based prevention strategies designed to reduce risk factors, foster prosocial behaviors, and promote healthier developmental trajectories in adolescents.

4. Originality, Rationale and Significance

Forensic cyberpsychology, an emerging interdisciplinary field, integrates principles of psychology and digital forensics to understand and mitigate cyber-related behaviors [16]. This study builds on forensic cyberpsychology by exploring how dark personality traits in adolescents are influenced by familial and environmental factors. This approach aligns with the Validation Syndrome Diagnostic Triangle (VSDT) framework, offering a psychological lens to understand how these traits translate to both offline and digital contexts. Reference [17] emphasize that forensic cyberpsychology can enhance the understanding of behavioral patterns that lead to cybercrimes, providing insights into how adolescents with Dark Triad traits may develop manipulative behaviors in online environments. The originality of this study lies in its integration of psychological constructs with environmental stressors through the Validation Syndrome Diagnostic Triangle (VSDT) model. This novel framework highlights how psychological drivers, self-doubt, craving for validation, and self-gratification interact with adverse familial and socioeconomic conditions to amplify maladaptive behaviors [18]. The rationale for this study is grounded in the increasing prevalence of antisocial behaviors among adolescents and the societal burden of juvenile delinquency. Without effective interventions, 60% of adolescents with early antisocial tendencies persist into adulthood, leading to chronic criminality, emotional detachment, and reduced community cohesion [10],[9]. Existing tools such as the Early Assessment Risk List Version 3 (EARL-V3) have limited accessibility and fail to capture the complex interplay of risk and protective factors within broader developmental contexts [19]. The significance of this study transcends academic inquiry by contributing to theoretical frameworks that elucidate the complex interplay between psychological and environmental factors in shaping adolescent personality development. The findings have practical implications, offering educators, clinicians, and policymakers' evidence-based tools and strategies for early detection and intervention. By addressing the roots of maladaptive traits, this research seeks to reduce the societal burden of antisocial behaviors and promote the development of prosocial, resilient adolescents.

This study aims to elucidate the psychological and environmental factors that contribute to the development of Dark Triad traits in adolescents. Specifically, it seeks to identify the psychological drivers, including self-doubt, desire, and self-gratification, as well as environmental factors, such as familial conflict, socioeconomic stress, and parental monitoring, that shape the emergence of these maladaptive traits. Furthermore, the study aims to validate the utility of the Validation Syndrome Diagnostic Triangle (VSDT) framework in understanding the development of Dark Triad traits. By doing so, it will provide a comprehensive framework for identifying and addressing the underlying factors that contribute to the emergence of these traits. In addition, the study will explore the protective role of Light Triad traits, including self-confidence, self-contentment, and selflessness, in promoting prosocial behaviors. This will provide valuable insights into the mechanisms by which these traits can mitigate the negative effects of Dark Triad traits. Ultimately, the study aims to provide actionable recommendations for early intervention strategies targeting at-risk adolescents. By adopting a structured approach, this research aims to advance theoretical understanding and practical applications, ultimately contributing to societal stability and individual well-being.

5. Literature Review

This literature review adopts a systematic approach to explore the primary drivers of antisocial personality development in adolescents and the influence of familial and environmental factors on this development. The overarching research question guiding this review is: *What are the primary drivers of antisocial personality development in adolescents, and how do familial and environmental factors influence this development?* The review focuses on peer-reviewed articles published within the last 2-3 years, prioritizing recent 2024 references to ensure relevance and timeliness. Articles not in English or lacking peer-review credentials were excluded. Over one hundred and fifty peer-reviewed papers published between 2022 and 2024 were screened, and only the most relevant studies were included in this paper. Only one non-peer reviewed article and a government sponsored research report was cited. The search strategy included specific terms such as "adolescent personality development," "Dark Triad traits," "environmental influences on antisocial behaviors," and "parenting styles and personality traits." Databases such as PsycINFO, MDPI, PubMed, and Google Scholar were utilized to ensure a comprehensive collection of studies that meet the inclusion criteria. This method ensures the integration of current, high-quality evidence into the analysis, providing a robust foundation for understanding the interplay between psychological drivers and environmental stressors in shaping adolescent personality traits.

A. Key Drivers of Dark Triad Traits

The development of personality traits in adolescence is significantly shaped by environmental and familial contexts [1]. Research has consistently shown that high-conflict family settings, socio-economic challenges, and inadequate parental supervision can influence the emergence of maladaptive traits [20],[21],[6]. Adolescents in such contexts often experience self-doubt and a heightened desire for validation, leading to a craving for social recognition and self-gratification [22]. Studies have also shown that individuals raised in high-stress environments are more likely to internalize feelings of self-doubt and frustration, which, when coupled with unmet desires and a need for self-gratification, foster a dependency on external validation [22],[23]. This interdependence encapsulates how self-doubt, desire, and self-gratification intertwine to fuel Dark Triad traits and behaviors.

B. Development of Dark Triad Traits from Familial Environmental Factors

The development of Dark Triad traits is often a response to early familial dynamics and environmental pressures, for instance, adolescents experiencing neglect or overly permissive parenting may exhibit heightened self-doubt and insecurity, leading to a craving for social validation and the use of manipulative strategies to fulfill self-gratifying needs [24]. In the absence of supportive relationships, these adolescents may resort to antisocial behaviors to assert themselves, especially if self-doubt, desire, and self-gratification remain reinforced by continuous exposure to negative familial or environmental influences [25]. This persistence of maladaptive traits highlights the resilience of these drivers, often outweighing positive influences and creating a reinforced loop of Dark Triad characteristics that persist into adulthood [23].

C. Commonalities in Dark Triad Traits

Research by [18] stated that the Dark Triad traits are anchored by common psychological drivers: self-doubt, desire, and self-gratification; and suggests that these elements not only initiate but also sustain the development of Dark Triad traits from adolescence into adulthood [26]. Self-doubt, when combined with unmet desire and a need for self-gratification, encourages behaviors focused on control, manipulation, and validation [23]. Adolescents exhibiting these traits often prioritize self-interested behaviors that override pro-social impulses, as the need for validation and self-affirmation eclipses alternative positive cues from their environment, highlighting the entrenched nature of these core drivers and their role in shaping long-term personality outcomes [27],[28].

D. Interplay of Protective and Risk Factors

In contrast, adolescents who cultivate traits like selflessness, self-confidence, and self-contentment, often due to positive familial and environmental reinforcement, tend to rely less on external validation and are more resilient against social pressures to engage in manipulative or antisocial behaviors [29]. Supportive relationships and stable environments provide a buffer, helping mitigate the allure of Dark Triad traits even in the face of adversity, while adolescents who lack such environments may increasingly turn to maladaptive behaviors as coping mechanisms [23].

E. Impact of Socioeconomic Stressors and Parental Influence

Socioeconomic challenges add another layer of complexity to the development of Dark Triad traits, as adolescents in economically disadvantaged settings often experience heightened levels of stress and instability, which can exacerbate self-doubt and foster desires that may be unmet in typical social structures [30]. Parental monitoring, or lack thereof, also plays a crucial role in shaping adolescent personality development [24]. For example,

permissive parenting, characterized by a lack of boundaries, allows for the unchecked development of self-doubt and a heightened need for validation, leading adolescents to adopt narcissistic traits as a means of compensating for their insecurities [31]. In contrast, authoritative parenting, characterized by consistent boundaries and warmth, has been shown to reduce the likelihood of Dark Triad trait development by reinforcing positive behaviors, emotional regulation, and empathy [32]. Adolescents raised in such supportive environments are more likely to develop self-contentment, self-confidence and selflessness, which counteract the core drivers of the Dark Triad [23]. Therefore, socioeconomic stressors and parenting style are integral to understanding both the risks of developing maladaptive traits and the potential for cultivating resilience and prosocial behaviors in adolescents [6].

F. Forensic Cyberpsychology Context and Implications

Forensic cyberpsychology bridges the gap between psychological analysis and digital behavioral profiling. Reference [17] highlights that integrating psychological frameworks with digital forensics can reveal how personality traits like narcissism and machiavellianism predispose individuals to cyber-related offenses. This study complements findings from [14], which outline a comprehensive framework for cyber behavioral analysis, by focusing on how familial dynamics influence these traits. For example, adolescents in high-conflict families are more likely to develop validation-seeking behaviors that translate into digital manipulations, such as cyberbullying or hacking. As noted by [17], forensic cyberpsychology bridges the gap between behavioral psychology and digital forensics, enhancing predictive capabilities for addressing cybercrime driven by Dark Triad traits.

G. Broader Environmental Influences on Dark Triad Traits in Adolescents

Cultural norms and societal expectations significantly shape adolescent behavior, including the development of Dark Triad traits [33]. In cultures that prioritize individualism, adolescents often learn to value self-promotion and competition, which can cultivate narcissistic and machiavellian traits as they seek to establish their social standing [34]. In contrast, collectivist cultures, though emphasizing social cohesion, may still foster machiavellian traits in adolescents who learn to navigate complex social hierarchies to secure social acceptance, for example, a study comparing Western and East Asian adolescents found that Western participants displayed higher levels of narcissism, while East Asian participants exhibited covert manipulative behaviors to navigate group dynamics [35]. Environmental stressors such as familial conflict have also been shown to foster manipulative tendencies associated with the Dark Triad traits [36].

H. The role of Parenting Styles: Authoritative, Permissive and Neglectful Approaches

Parenting style is a central determinant in adolescent personality development, and extensive research shows that each style, authoritative, permissive, neglectful, and authoritarian has distinct impacts on Dark Triad traits [37]. Authoritative parenting, which combines warmth and structure, promotes emotional stability and self-confidence in adolescents, countering the development of traits such as narcissism and machiavellianism, for example, adolescents raised in authoritative households often display high levels of self-regulation and empathy, as they are consistently guided by supportive boundaries [32]. In contrast, permissive parenting, characterized by a lack of boundaries, allows for the unchecked development of self-doubt and a heightened need for validation; and adolescents in these environments may adopt narcissistic traits as a means of compensating for their insecurities [31]. Neglectful parenting, however, has been linked with more severe outcomes, such as psychopathy and a tendency toward emotional detachment [38]. A study by [39] on familial impact on psychopathy found that adolescents with neglectful parents displayed high levels of self-gratification and low empathy, which are foundational to psychopathic tendencies. These adolescents, lacking emotional connection and supervision, often develop manipulative behaviors to satisfy their own needs without regard for others [24]. Authoritarian parenting, though often associated with discipline, may also contribute to the development of Dark Triad traits by instilling resentment and a need for control, especially in environments with high levels of conflict [40].

I. The influence of Cultural Norms, Social Media and Societal Expectations

Societal expectations, particularly around success, appearance, and social media presence, exacerbate these tendencies. In many cultures, adolescents are under constant pressure to project an idealized self-image, often leading them to adopt deceptive behaviors to maintain a façade [41]. This pressure is amplified by social media, where instant feedback mechanisms encourage validation-seeking and self-gratification [42]. Such platforms provide immediate reinforcement for narcissistic behaviors, further embedding Dark Triad traits as adolescents prioritize online status over genuine connections [43]. Forensic cyberpsychology highlights the role of cultural norms in shaping the expression of Dark and Light Triad traits, particularly in digital contexts [33]. As [36] highlights, human psychological factors play a critical role in risk behaviors, which align with the manipulative tendencies observed in individuals with Dark Triad traits, particularly in digital environments.

J. Peer Influence and Social Validation in the Development of Dark Triad Traits

Peer influence is a critical factor in the development of Dark Triad traits, as adolescents often prioritize social acceptance over ethical behavior [34]. Research indicates that adolescents whose peer groups value status or control are more likely to engage in narcissistic and machiavellian behaviors [34]. For instance, adolescents who seek popularity may adopt narcissistic traits, projecting confidence and charisma to dominate social interactions [44]. Moreover, social media adds a layer of complexity, offering adolescents a platform to curate their image and receive immediate validation, reinforcing these tendencies [41]. Peers can also influence psychopathic traits, particularly in high-risk settings, as adolescents in peer groups that endorse risk-taking or disregard for social norms often adopt psychopathic tendencies to fit in, demonstrating low empathy and high impulsivity [45]. This is particularly pronounced in online spaces, where anonymity enables aggressive behaviors with minimal consequences, reinforcing deviant traits [46].

K. Biological and Genetic Factors: The Heritability of Dark Triad Traits

Genetic factors also contribute to Dark Triad traits [47], with studies indicating that narcissism, psychopathy, and machiavellianism have moderate to high heritability; studies reveal that psychopathic traits, in particular, are significantly influenced by genetic predispositions, suggesting that some individuals may be biologically inclined toward emotional detachment and impulsivity [48], [47]. Similarly, narcissism appears to have a genetic component, with research indicating that traits such as grandiosity and entitlement are heritable [49]. However, genetic predispositions interact with environmental factors, meaning that a supportive or structured environment can mitigate the expression of Dark Triad traits even in genetically predisposed individuals [37]. For example, adolescents with a genetic tendency toward narcissism may develop self-confidence rather than arrogance if raised in an authoritative, nurturing environment. Thus, while genetic factors play a role in personality development, environmental influences remain a crucial factor, for understanding the complex interplay between biology and external influences [47].

6. Research Methods

A. Participants

The study utilized data from the Add Health Longitudinal Study, which surveyed 15,000 adolescents aged 12–18 years from diverse socioeconomic backgrounds, family structures, and environmental settings. Participants completed questionnaires over five waves of data collection (1995–2018), ranging from adolescence in Wave I: 12–18 years, to adulthood in Wave V: 32–42 years [50], [51]. Responses were scored using a Likert scale (1–5), with weighted scores calculated to represent population distributions accurately. No additional participants were recruited or excluded during the analysis, as raw data were preserved

B. Materials

The data were drawn from the Add Health dataset, a comprehensive resource that captures variables relevant to family conflict, socioeconomic status, parental monitoring, and personality traits. Variables were thematically coded to align with constructs central to the research, including self-doubt ("I often question my abilities," H1FS9) and family conflict ("My family argues almost daily," PB20). Other key variables analyzed were associated with themes such as desire (H3SP27), self-gratification (H3TO102), selflessness (H3CC1), and parental monitoring (H2PF11). The thematic codes were refined to match phrases directly from adolescent responses, enabling a more nuanced thematic analysis. The refined codes are presented in Tables 1,5,6,7,8 and 9; and fig. 6.

Table 1. Mapping of Addhealth Survey Data Variables in Thematic Codes

Theme: Self-Doubt (SD)	Theme: Desire or Craving (DC)	Theme: Self-Gratification (SG)	Theme: Self-Confidence (SC)	Theme: Self-Contentment (SCT)
Thematic code (Phrase): "I often question my abilities.	Thematic code (Phrase): "I need constant validation and reassurance."	Thematic code (Phrase): "I see no harm in taking advantage of others to benefit myself"	Thematic code (Phrase): "I don't compare myself to others because I value and trust my uniqueness"	Thematic code (Phrase): "I am grateful for what I have and at peace with my circumstances"
AddHealth Data Variable: H1FS9	AddHealth Data	AddHealth Data Variable: H3TO102	AddHealth Data Variable: H3TO97	AddHealth Data Variable: H3SP3

	Variable: H3SP27			
Theme: Self-Lessness (SL)	Theme: Family Conflict: (FC)	Theme: Socio-economic Status (SES)	Theme: Parental Monitoring (PM)	Theme: Lack of Parental Monitoring (LPM)
Thematic code (Phrase): "I am most fulfilled when I can help someone in need."	Thematic code (Phrase): "My family argues almost daily, and it affects me a lot."	Thematic code (Phrase): "Sometimes we don't have enough food or the things we need at home"	Thematic code (Phrase): "My Parents know who my friends are and what we do together."	Thematic code (Phrase): "I feel like I have made mistakes that could have been avoided if my parents paid more attention"
AddHealth Data Variable: H3CC1	AddHealth Data Variable: PB20	AddHealth Data Variable: PA56	AddHealth Data Variable: H2PF11	AddHealth Data Variable: H1PR3

C. Procedure

Data were extracted from publicly available adolescent and parent questionnaire responses following Add Health guidelines [52]. Variables were mapped to thematic codes for subsequent analysis. Quantitative data were analyzed for correlations and regression, while qualitative data underwent thematic analysis based on [53],[54] six-phase framework [55].

D. Analysis

A mixed-methods approach was adopted, integrating quantitative and qualitative methodologies:

Quantitative Analysis: Statistical analysis was conducted using Python libraries, and a range of statistical techniques were employed to examine the relationships between variables. Pearson correlation was used to assess the relationships between constructs, including self-doubt, desire, and self-gratification, and familial factors such as parental monitoring and family conflict. Correlation coefficients and p-values were calculated to determine the strength and significance of these relationships. Additionally, multiple regression analysis was used to evaluate the predictors of personality traits, with familial and environmental factors serving as independent variables. The variance explained by these factors was tested using regression models, providing insight into the relative importance of each factor in predicting personality traits. To verify the accuracy of the results, manual correlation and regression calculations were conducted.

Qualitative Analysis: A six-phase thematic analysis, as outlined by [53], was employed to extract adolescent narratives related to personality traits. Open coding revealed recurring themes linked to familial and environmental influences, which are presented in Tables 5, 6, 7, 8 and 9; and fig. 6. Thematic heat maps were used to visualize the interconnections between these themes, facilitating a deeper understanding of validation-seeking and self-acceptance behaviors, as depicted in Fig. 1, 3 and 5.

Data was visualized using tables, heatmaps and line graphs to triangulate findings.

7. Results

As we examine the results, we can see that the coefficient values reveal the magnitude of the relationship between the variables, the p-values indicate the likelihood of the relationship occurring by chance, and the regression values show the direction and strength of the relationship, providing valuable insights into the significance and implications of our findings.

This section presents the findings from both quantitative and qualitative analyses, focusing on the relationships between familial factors, personality traits, and adolescent behaviors. Tables and figures are included to visually enhance understanding of the data.

The statistical analysis revealed significant correlations between familial factors and personality traits, as depicted in Tables 2, 3, and 4, as well as Fig. 1, 2, 3, 4 and 5

A. Example Manual Correlation Calculations: Risk Predictors

To validate the results derived from statistical software, manual Pearson correlation and regression calculations were performed. The following examples illustrate the manual calculations.

Example 1: Pearson Correlation Coefficient

The correlation between self-doubt and lack of parental monitoring was calculated using raw values:

$$\frac{\Sigma (xi - \bar{x})(yi - \bar{y})}{(\sum (xi - \bar{x})^2 \cdot \sum (yi - \bar{y})^2)} \quad (1)$$

The Pearson correlation coefficient formula is widely used to measure the strength and direction of relationships between variables [56].

Using the formula, a correlation coefficient of r = 0.95279 was obtained, indicating a very strong positive correlation between self-doubt and lack of parental monitoring.

Example 2: Regression Calculations

The linear regression equation for self-doubt was calculated as:

$$y = \beta 0 + \beta 1x1 + \beta 2x2 + \ldots + \beta kxk + \varepsilon \quad (2)$$

The regression methodology used in this analysis aligns with the guidelines provided by [56] emphasizing its suitability for multivariate relationships. The formula was applied to manually calculate the coefficient for parental monitoring. The calculated coefficient, β = 0.61126, indicates that parental monitoring has a significant impact on self-doubt. Specifically, for every unit increase in parental monitoring, self-doubt increases by an average of 0.611 units.

The findings suggest that excessive parental monitoring may inadvertently foster higher levels of self-doubt in adolescents, potentially exacerbating the development of dark triad traits. However, the correlation between self-contentment and parental monitoring was strong and positive (r = 0.86696), suggesting that parental monitoring may have a protective effect on self-contentment in adolescents. The manual Pearson correlation and regression calculations support these findings.

B. Quantitative Results: Risk Behavior Predictors

Self-Doubt: Family conflict (r = 0.786) and socioeconomic stress (r = 0.850) demonstrated strong positive correlations, while lack of parental monitoring exhibited the strongest correlation (r = 0.953).

Desire (Craving): Parental monitoring showed a strong negative correlation (r = -0.689), while family conflict (r = 0.812) and socioeconomic stress (r = 0.860) were positively correlated.

Self-Gratification: The strongest predictor was family conflict (r = 0.898), followed by socioeconomic stress (r = 0.792) while Parental monitoring correlated negatively.

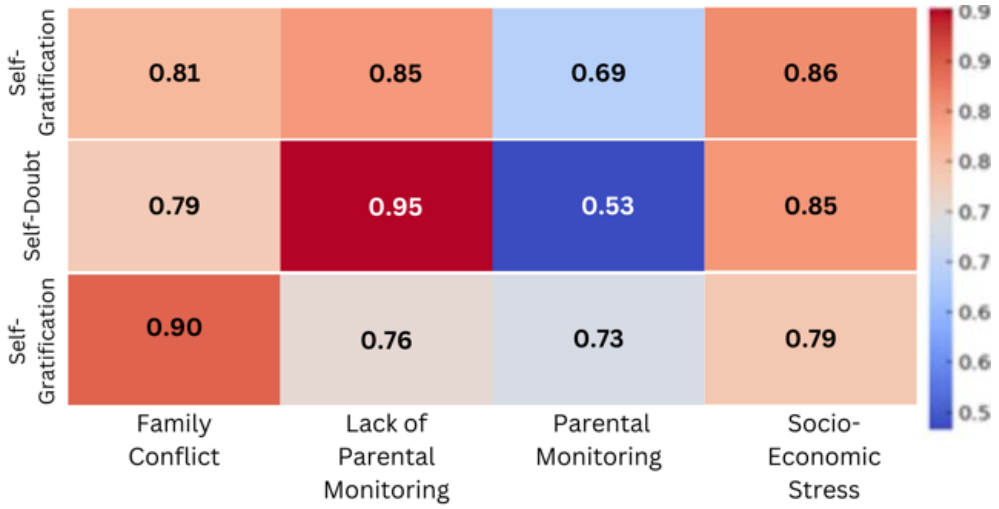

Figure 1. Heatmap of Correlations for Risk Predictors

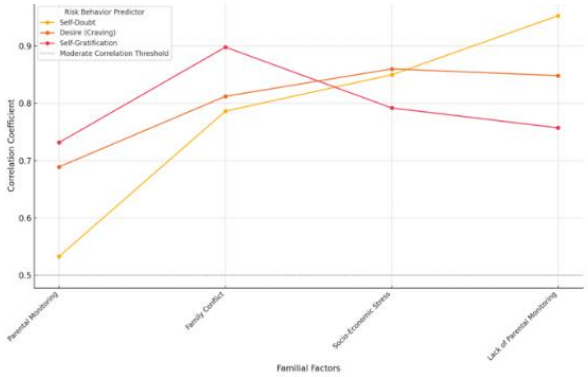

Figure 2. Line graph of correlations for risk factors

Table 2. Pearson Correlation Coefficient between Familial Factors and Risk Predictors

Dependent	Independent	Correlation	P-Value
Desire (Craving)	Parental Monitoring	0.6891427395919163	0.0
Desire (Craving)	Family Conflict	0.8121846132306475	0.0
Desire (Craving)	Socio-Economic Stress	0.8600062266498096	0.0
Desire (Craving)	Lack or Parental Monitoring	0.8483231860361031	0.0
Self-Gratification	Parental Monitoring	0.7316128635360266	0.0
Self-Gratification	Family Conflict	0.898030274286622	0.0
Self-Gratification	Socio-Economic Stress	0.7917912244627876	0.0
Self-Gratification	Lack of Parental Monitoring	0.75717996331397	0.0

Table 2 summarizes the Pearson correlation coefficients between familial factors and various risk behavior predictors, illustrating the strength and direction of these associations. This provides a quantitative foundation for understanding how familial dynamics contribute to self-doubt, desire, and self-gratification.

C. Quantitative Results: Protective Behavior Predictors

Self-Contentment: Strongly associated with parental monitoring (r = 0.867) and moderately linked to socioeconomic stress (r = 0.659), while family conflict demonstrated resilience-building potential (r = 0.743).

Self-Confidence: Strong positive correlations were found with parental monitoring (r = .848) and family conflict (r = 0.675), suggesting resilience-building aspects.

Selflessness: Correlations with parental monitoring (r = 0.703) and socioeconomic stress (r = 0.419) suggested that adversity could foster prosocial behaviors.

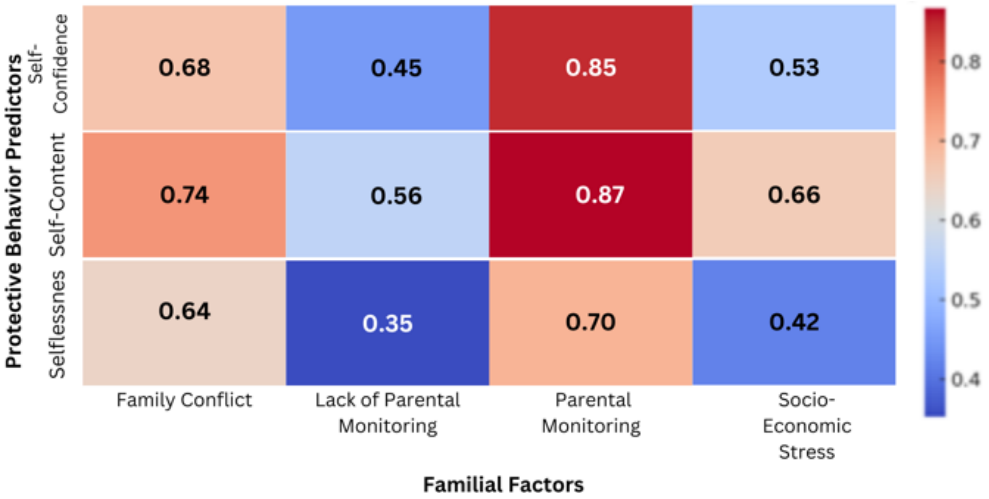

Figure 3. Heatmap of Correlations for Protective Predictors

Note: Parental monitoring is strongly associated with self-confidence and self-contentment.

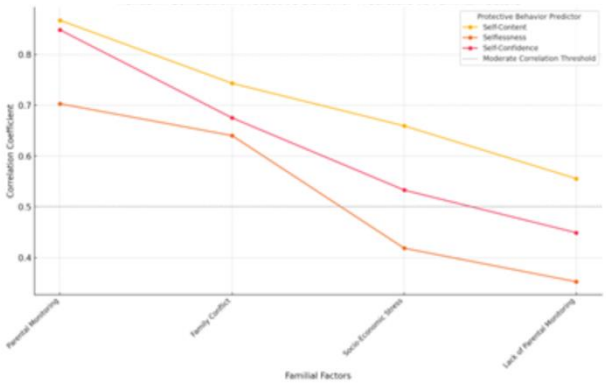

Figure 4. Line graph of Protective Traits and Familial Factors

Note: Highlights how constructive conflict resolution in family settings fosters selflessness.

Table 3. Pearson Correlation Coefficients between the Protective Behavior Predictors (SC, SCT, SL) and Familial Factors (PM, FC, SES, LPM)

Predictor Variable	Familial and Environmental Variable	Correlation Value	P-Value
Self-Content	Parental Monitoring	0.8669643584082596	0.0
Self-Content	Family Conflict	0.7429940482450558	0.0
Self-Content	Socio-Economic Stress	0.6593420630436255	0.0
Self-Content	Lack of Parental Monitoring	0.5556258908665815	0.0
Selflessness	Parental Monitoring	0.7028444145153122	0.0
Selflessness	Family Conflict	0.6402497870780437	0.0
Selflessness	Socio-Economic Stress	0.4186546621447843	0.0
Selflessness	Lack of Parental Monitoring	0.35279922616472414	0.0
Self-Confidence	Parental Monitoring	0.8480352411073511	0.0
Self-Confidence	Family Conflict	0.6750147638373033	0.0

Multiple regression models explained 92.68% of the variance in self-doubt (R^2 = .9268). Family conflict and socioeconomic stress were significant predictors of maladaptive traits, while active parental monitoring played a protective role, lack of parental monitoring had limited direct significance.

Table 4. Multiple Linear Regression Analysis Results for the Risk Predictors (SD, DC, SG)

Dependent Variable	R-Squared	Coefficients	P-Value
Self-Doubt	0.9268420380265109	{'const': -0.34872721498436476, 'Parental Monitoring': -0.008453382245699581, 'Family Conflict': 0.15796239380726296, 'Socio-Economic Stress': 0.1261070505389621, 'L	{'const': 1.826233102302997e-157, 'Parental Monitoring': 0.039165688117789706, 'Family Conflict': 1.9457404966527473e-294, 'Socio-Economic Stress': 1.756736559819308e-64, 'Lack of Parental Monitoring': 0.0}
Desire (Craving)	0.8551686222661512	{'const': 0.0, 'Parental Monitoring': 0.0, 'Family Conflict': 4.8581678707330875e-86, 'Socio-Economic Stress': 0.0, 'Lack of Parental Monitoring': 0.0}	{'const': 0.0, 'Parental Monitoring': 0.0, 'Family Conflict': 4.8581678707330875e-86, 'Socio-Economic Stress': 0.0, 'Lack of Parental Monitoring': 0.0}
Self-Gratification	0.8516636548324787	{'const': -1.2575213725400496, 'Parental Monitoring':	{'const': 0.0, 'Parental Monitoring':

	0.26878265147198244, 'Family Conflict': 0.6958260432189234, 'Socio-Economic Stress': 0.36915869051531747, 'Lack of Parental Monitoring': 0.1678513817761756}	2.1899981396055704e-229, 'Family Conflict': 0.0, 'Socio-Economic Stress': 5.5079334334529444e-136, 'Lack of Parental Monitoring': 1.238752443619641e-79}

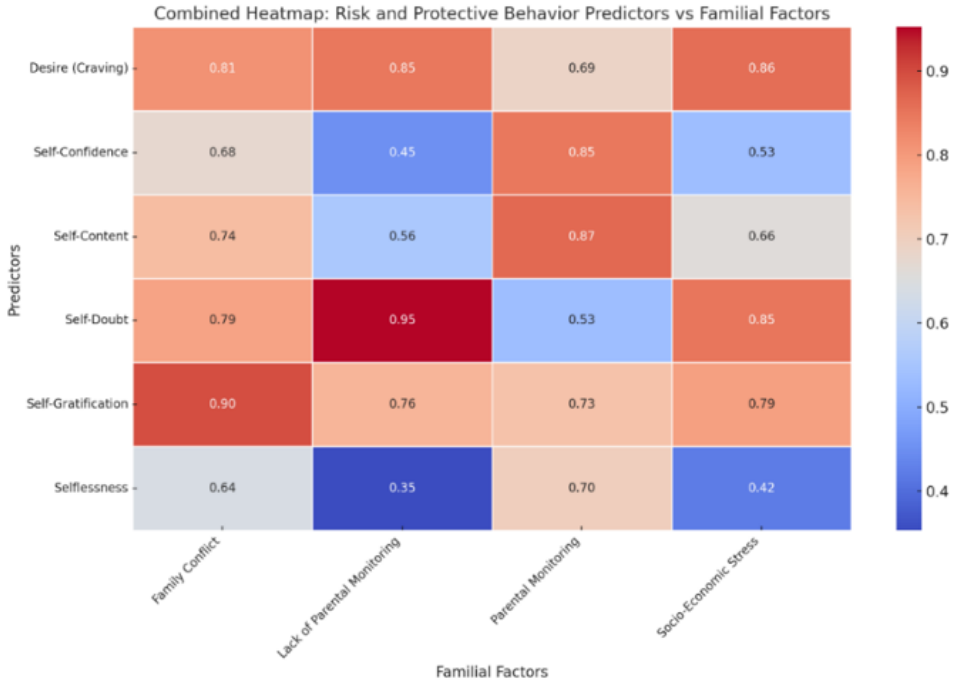

Figure 5. Heatmap of Coefficients for Risk and Protective Predictors

The heatmaps presented in Figures 1, 3, and 5 visually illustrate the strength of correlations between the variables, revealing family conflict as the most influential predictor across both risk and protective factors. The regression coefficients in Table 4, illustrating the statistical influence of familial factors, reveal that family conflict ($\beta = 0.158$, $p < .001$) is the most significant predictor. Table 4 presents the results of multiple linear regression analyses, showcasing the extent to which familial factors explain variations in adolescent risk behaviors. The coefficients and p-values highlight the statistical significance and practical implications of these predictors.

D. Qualitative Results

Table 5 presents the Coding Categories and Definitions used in the qualitative analysis, which guided the systematic coding and analysis of the adolescent narratives to identify themes and patterns related to personality traits and familial dynamics.

Table 5. Coding Categories and Definitions

Category	Code	Definition
Environmental and Familial Factors	Family Conflict (FC)	Tensions, disagreements, and disputes within the family.
	Socio-Economic Stress (SES)	Financial and social pressures impacting the family environment.
	Parental Monitoring (PM)	Active supervision and involvement in adolescents' lives by parents.
	Lack of Parental Monitoring (LPM)	Insufficient parental oversight or involvement.
Risky Behavioral Trait	Self-Doubt (SD)	Persistent feelings of inadequacy or questioning

Predictors		one's abilities.
	Self-Gratification (SG)	The tendency to prioritize personal pleasure or gain over ethical considerations.
	Desire or Craving (DC)	The need for constant reassurance or validation
Protective Behavioral Trait Predictors	Self-confidence (SC)	Belief in one's own abilities and trust in one's uniqueness.
	Self-Contentment (STC)	A sense of gratitude and peace with one's circumstances.
	Selflessness (SL)	Fulfillment derived from helping or supporting others.
Outcome Traits	Dark Triad Traits (DTT)	Maladaptive traits, including Machiavellianism, Narcissism, and Psychopathy.
	Light Triad Traits (LTT)	Ethical behavior and Positive traits, such as empathy, altruism, and compassion

To complement the quantitative findings, qualitative thematic analysis was conducted to capture the nuanced experiences of adolescents. These narratives provide deeper insights into how familial factors influence personality traits and behaviors

Thematic analysis revealed two dominant behavioral patterns:

Validation-Seeking Behaviors (Dark Triad Traits): Adolescents reported external validation needs (e.g., "I need constant reassurance"), linking to traits like machiavellianism and narcissism. Narratives linked self-doubt, desire, and self-gratification to neglectful parenting, family conflict, and economic stress.

Self-Acceptance Behaviors (Light Triad Traits): Traits like self-confidence and selflessness were connected to supportive parental involvement and constructive conflict resolution. Adolescent narratives reflected traits such as self-confidence and selflessness (e.g., "I value my uniqueness"), suggesting resilience and prosocial orientation,

Table 6. Thematic Analysis Matrix Table – Dark Triad Traits

Theme	Theme Description	Code(s)	Causal Familial Factors	Linked Personality Trait	Illustrative Quotes	Data Interpretation	Triad Affiliation
Self-doubt (SD)	Pervasive feelings of uncertainty and inadequacy in adolescents.	"I often question my abilities."	Lack of Parental Monitoring (LPM), Family Conflict (FC)	Psychopathy	"I feel uncertain about my decisions."	Ineffective monitoring and high family conflict foster self-doubt and disengagement, linked to psychopathy.	Dark Triad
Desire (Craving) (DC)	Adolescent's intense longing for attention and validation from others.	"I need constant validation and reassurance"	Family Conflict (FC), Lack of Parental Monitoring (LPM), Socio-economic Stress (SES),	Machiavellianism	"I crave social media attention and likes."	High family conflict and neglectful parenting reinforce manipulative tendencies, linked to Machiavellianism.	Dark Triad
Self-Gratification (SG)	An overarching focus on	"I see no harm in taking advantage	Socio-economic Stress (SES),	Narcissism	"I think self-advancement should	Economic hardship and insufficient guidance foster	Dark Triad

	personal entitlement, self-gain and immediate rewards	of others to benefit myself."	Lack of Parental Monitoring (LPM), Family Conflict (FC),		always come first."	selfish and entitlement-driven behavior, linked to narcissism

Table 7. Thematic Analysis Matrix Table – Light Triad Traits

Theme	Theme Description	Code (s)	Causal Familial Factors	Linked Personality Trait	Illustrative Quotes	Data Interpretation	Triad Affiliation
Self-Confidence (SC)	Positive self-regard and unwavering trust in one's abilities and judgement.	"I don't compare myself to others because I value and trust my uniqueness."	Parental Monitoring (PM), Conflict Resolution Skills (FC)	Empathy	"I believe in myself and my potential."	"Effective parental involvement through open and honest communication builds trust and empathy in adolescents".	Light Triad
Self-Contentment (SCT)	Feeling satisfied with one's life and accomplishments despite challenges	"I'm grateful for what I have and at peace with my circumstances."	Parental Monitoring (PM), Socio-economic Stress (SES),	Compassion	"I feel content while still working toward my goals."	Resilience developed through hardship and parental involvement fosters a positive sense of identity and self-acceptance, leading to increased self-contentment	Light Triad
Selflessness (SL)	Prioritizing others' needs and well-being above one's own desires and interests.	"I am most fulfilled when I can help someone in need."	Parental Monitoring (PM), Family Conflict (FC)	Altruism	"I enjoy working with others to achieve a common goal."	Effective parental monitoring and open communication fosters selflessness and altruism in adolescents	Light Triad

The sampled quotes revealed how adolescents perceived familial dynamics, underscoring the significance of validation-seeking behaviors in promoting maladaptive traits and self-acceptance behaviors in fostering prosocial traits. The tables (7 and 8) and thematic process diagram (Fig. 6) provided additional support for these findings, demonstrating the intricate relationships between familial factors and personality traits.

Figure 6. illustrates the thematic analysis process, connecting key familial dynamics to adolescent personality traits. This visual framework aids in understanding the pathways leading to either maladaptive or prosocial behaviors.

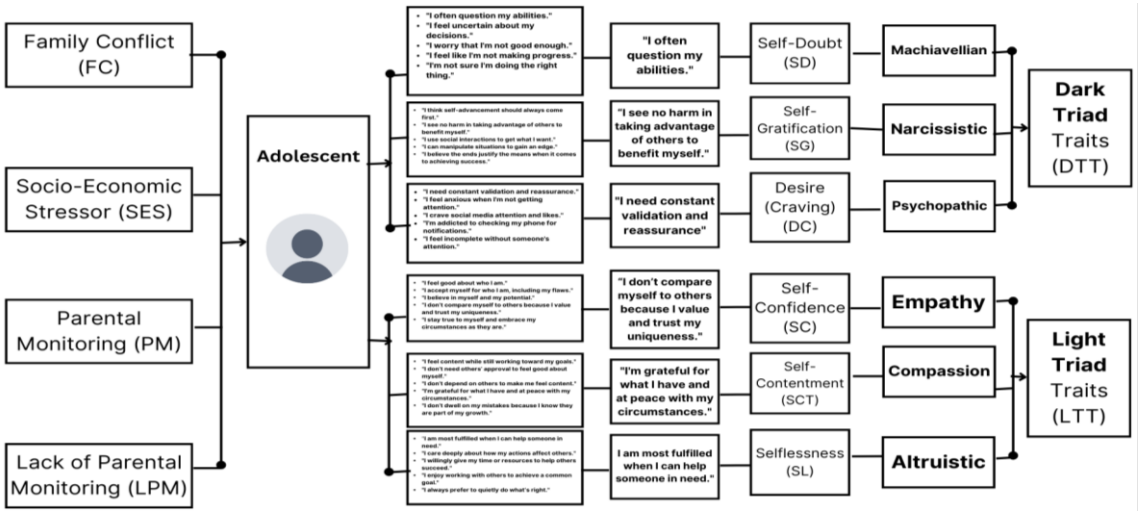

Figure 6. Thematic Analysis Process Diagram

Table 8. Qualitative Analysis Summary Table: Dark Triad Traits

Research Question/ Objective	Key Themes Identified	Code/Phrase	Linked Trait	Behavior Predictor	Deduced Implications	Sources
How does parental monitoring (PM) influence the development of Dark Triad traits in adolescents?	Self-doubt (SD)	"I often question my abilities."	Psychopathy	Risk (SD): Ineffective parental Monitoring	Lack of parental encouragement fosters psychopathic tendencies.	[11] [15] [26] [60] [61] [62] [63]
How does lack of parental monitoring (LPM) influence the development of Dark Triad traits in adolescents?	Desire (Craving) (DC)	"I need constant validation and reassurance"	Machiavellianism	Risk (DC): Neglectful Parenting	Lack of Parental structure and overindulgence promotes manipulative tendencies in adolescents.	[14] [26] [27] [52] [60] [63] [64]
How do socio-economic stressors (SES) influence the development of Dark Triad traits in adolescents?	Self-Gratification (SG)	“I see no harm in taking advantage of others to benefit myself."	Narcissism	Risk (SG): Economic Strain	Financial hardship fosters selfish entitlement and narcissistic behavior.	[6] [15] [20] [21] [22] [59] [82]

Table 9. Qualitative Analysis Summary Table: Light Triad Traits

Research Question/ Objective	Key Themes Identified	Code/Phrase	Linked Trait	Behavior Predictor	Implications	Sources
How does parental monitoring (PM) influence the development of Dark Triad traits in adolescents?	Self-Confidence (SC)	“I don’t compare myself to others because I value and trust my uniqueness."	Empathy	Protective (SC): Effective Parental Monitoring	Active Parental involvement builds trust and fosters Light Triad traits like altruism, empathy and compassion.	[6] [15] [20] [21] [22] [59] [82]
How does lack of parental monitoring (LPM) influence the development of Light Triad traits in adolescents?	Self-Confidence (SC)	"I feel like I’ve made mistakes that could have been avoided if my parents paid more attention."	Empathy	Protective (SC)	Reduced Parental oversight might foster autonomy or self-reliance in some adolescents.	[20] [65] [66] [67] [68] [69] [70]
How do socio-economic stressors (SES) influence the development of Light Triad traits in adolescents?	Self-Contentment (SCT)	"I'm grateful for what I have and at peace with my circumstances."	Altruism	Protective (SCT): Resilience through Hardship	Economic hardship builds appreciation, empathy, and selflessness in adolescents, as they develop coping strategies focused on community and kindness,	[24] [71] [72] [73] [74] [75] [76]
How does family conflict (FC) influence the development of Light Triad traits in adolescents?	Selflessness (SL)	"I am most fulfilled when I can help someone in need."	Compassion	Protective (SL): Conflict Resolution Skills	Constructive conflict resolution can foster compassion and empathy, promoting prosocial traits.	[24] [68] [70] [80] [81] [82] [83]

The qualitative analysis summary Tables 8 and 9, provide a comprehensive overview of the narratives of adolescents from recent studies, directly addressing the research question and aligning with the explanatory sequential design described by [57]. This design was chosen to triangulate findings, further illustrate results, and offset methodological limitations in this study.

8. Discussion

The research findings highlight that parental monitoring plays a critical role in adolescent behavior, with lower parental involvement correlating with increased risk behaviors such as self-doubt, desire (craving), and self-gratification [21]. The present study explored the impact of familial and environmental factors on adolescent personality development, focusing on the interplay of risk predictors (self-doubt, desire/craving, self-gratification) and protective traits (self-confidence, self-contentment, selflessness) [1]. Quantitative analyses revealed strong correlations between familial conflict, socioeconomic stress, and risk predictors. For instance, self-doubt exhibited the highest correlation with lack of parental monitoring ($r = 0.953$, $p < 0.05$), indicating the critical role of parental

involvement in the life of adolescents. Conversely, protective traits were strongly associated with positive parental monitoring, with self-confidence ($r = 0.848$, $p < 0.05$) and self-contentment ($r = 0.867$, $p < 0.05$) emerging as significant outcomes of supportive parenting.

Regression analyses confirmed the findings, revealing that familial conflict and socioeconomic stress significantly predicted maladaptive traits, with R^2 values up to 0.93 for self-doubt. The results indicated that Dark Triad traits often emerge as responses to early familial dynamics and environmental pressures [24]. For instance, adolescents experiencing neglect or overly permissive parenting frequently exhibit heightened self-doubt and insecurity, which fosters a craving for social validation and the use of manipulative strategies to fulfill self-gratifying needs [24]. In the absence of supportive relationships, these adolescents may resort to antisocial behaviors to assert themselves, especially if self-doubt, desire, and self-gratification remain reinforced by continuous exposure to negative familial or environmental influences [25]. The persistence of maladaptive traits highlights the resilience of these drivers, often outweighing positive influences and creating a reinforced loop of Dark Triad characteristics that persist into adulthood [23]. The thematic analysis complemented these results, underscoring the alignment of adolescent narratives with the Validation Syndrome Diagnostic Triangle (VSDT) framework (fig. 7). These findings indicate that parental monitoring and familial environments critically shape the trajectory of adolescent personality traits [58],[3].

The results from the quantitative analysis empirically support the Validation Syndrome Diagnostic Triangle (VSDT) theory. Specifically, that risk predictors increase with negative familial factors, fitting the theoretical "validation-seeking" pathway. Protective predictors flourish under positive influences, aligning with the "self-confidence" and "self-contentment" aspects of the framework, fitting the "self-acceptance" pathway. These findings complement prior research [29] suggesting that empathy-building and resilience-focused interventions can disrupt the validation-seeking cycle. Integrating this knowledge, the Validation Syndrome Diagnostic Triangle (VSDT) framework shown on Fig. 7, offers a comprehensive lens for understanding how early familial and environmental conditions shape an adolescent's trajectory toward either Dark or Light Triad traits.

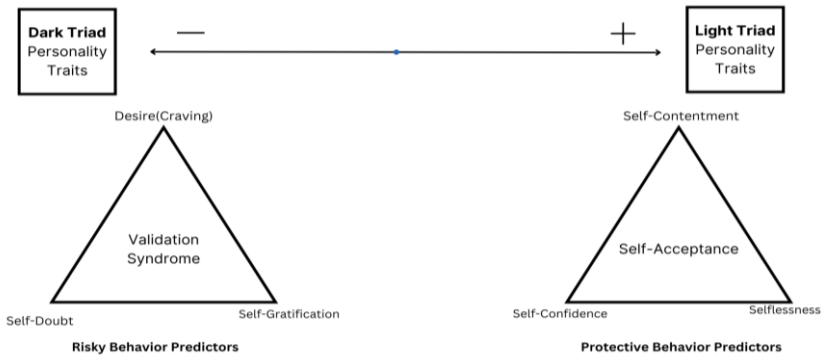

Figure 7. The Validation Syndrome Diagnostic Triangle (VDST) Framework

The Validation Syndrome (VS) aligns with patterns found in antisocial personality traits, yet it emphasizes self-doubt and the pursuit of validation as key drivers [18]. This nuance suggests that interventions aimed at strengthening self-contentment, fostering autonomous self-confidence, and developing prosocial values could prevent escalation into more entrenched antisocial or exploitative behaviors. The findings of this study underscore the VSDT framework, which posits that self-doubt, desire, and self-gratification coalesce in negative familial environments to perpetuate maladaptive behaviors [18]. Emerging evidence highlights how adolescent engagement with digital platforms often mirrors offline behavioral tendencies, particularly in individuals exhibiting Dark Triad traits [34]. These traits correlate strongly with cyberbullying, trolling, and other deceptive behaviors in online environments, where anonymity and reduced accountability amplify manipulative tendencies. Adolescents experiencing high family conflict and low parental monitoring often described behaviors driven by external validation, including manipulation and self-serving tendencies [59]. This reflects the cyclical nature of the VSDT, where self-doubt fosters desire, leading to self-gratification as a coping mechanism for unmet needs [21]. Conversely, parental monitoring emerged as a critical protective factor, reinforcing traits like self-confidence

and selflessness [20]. Narratives revealed that adolescents with strong parental involvement expressed gratitude, resilience, and fulfillment in helping others, behaviors aligned with the Light Triad traits of empathy, altruism, and compassion [84],[30]. Socioeconomic stress showed dual influences: while it exacerbated self-gratification, it also fostered resilience and self-contentment in some adolescents, suggesting that adversity may yield adaptive traits when paired with supportive parenting [59].

The findings of this study have significant implications for both theoretical and practical understanding. Theoretically, the study validates the Validation Syndrome Diagnostic Triangle (VSDT) framework as a holistic model for understanding how familial and environmental factors influence the emergence of Dark and Light Triad traits in adolescents. The integration of psychological and environmental dimensions highlights the dual role of familial conflict as both a risk factor and a potential resilience builder. Practically, the results emphasize the need for family-based interventions that reduce conflict, enhance parental monitoring, and address socioeconomic stressors. The Validation Syndrome Diagnostic Triangle (VSDT) framework can be leveraged as a valuable tool for developing targeted interventions that interrupt the development of maladaptive traits and behaviors, as well as a practical framework for modeling parenting styles that promote healthy family dynamics. Furthermore, programs that foster self-confidence and selflessness in adolescents can mitigate maladaptive behaviors and promote prosocial development [28].

A. Forensic Cyberpsychology Implications of the Findings

This study also situates its findings within a forensic cyberpsychology context, examining how online interactions influence developmental patterns. Adolescents with Dark Triad tendencies often engage in cyberbullying, catfishing, or other manipulative online behaviors, aligning with themes of self-gratification and desire. Conversely, supportive digital environments and parental monitoring of online activity foster resilience and protective traits [85]. The findings of this study have significant implications for forensic cyberpsychology. Adolescents with high levels of self-doubt and a craving for validation, often influenced by negative familial dynamics, are at a higher risk of engaging in cyber-related manipulations. The Validation Syndrome Diagnostic Triangle (VSDT) provides a framework to assess these traits, offering tools to predict and prevent cyber offenses. This supports the observations of [86], who underscores the importance of behavioral analytics in identifying risk factors, which could be instrumental in detecting manipulative online behaviors linked to Dark Triad traits.

Additionally, this research highlights the dual role of socioeconomic stress. While economic hardship fosters self-gratification and risky behaviors in some adolescents, it also promotes resilience in others when paired with positive parenting. Forensic cyberpsychology can use these findings to design interventions that leverage parental monitoring to reduce online risks, such as cyberbullying or unauthorized access to digital systems, as described by [87].

The Validation Syndrome Diagnostic Triangle (VSDT) can be applied to understand the psychological drivers behind cyber-related antisocial behaviors. By correlating these traits with online risk behaviors, the current study enhances forensic cyberpsychology's ability to inform targeted interventions, such as digital literacy programs and psychological assessments in schools. Reference [88] proposes that ethical leadership, and behavioral interventions can mitigate cyber risks, aligning with the need to foster resilience and protective traits among adolescents. Further corroborating these findings, [89] identifies the role of machiavellian and psychopathic tendencies in exacerbating insider threats, which are mirrored in the exploitative online behaviors of adolescents with Dark Triad traits. The study's strengths include its comprehensive mixed-methods approach, combining robust quantitative analysis with rich qualitative insights. However, it's reliance on secondary data limits the exploration of nuanced individual experiences, and self-reported measures may introduce bias. Additionally, the cross-sectional design precludes causal inference. Future longitudinal studies are recommended to confirm these findings over time and across diverse cultural contexts.

9. Conclusion

This study aimed to uncover the underlying mechanisms of deception and early warning signs of Dark Triad trait development in adolescents. The findings reveal a complex interplay between familial dynamics, with negative influences such as family conflict and socioeconomic stress exacerbating Dark Triad traits [1],[59] and protective factors like parental monitoring and resilience-building interventions promoting the development of Light Triad tendencies [29],[23]. These findings offer actionable insights for educators, clinicians, and policymakers seeking to foster adaptive adolescent development. The study's contributions to the field include the validation of the Validation Syndrome Diagnostic Triangle (VSDT) framework and the identification of key factors influencing adolescent personality development [18].

The findings indicate that familial conflict is the strongest predictor of Dark Triad traits, with adolescents in high-conflict environments displaying heightened self-doubt, desire, and self-gratification [24]. Socioeconomic stress compounds the development of antisocial behaviors, creating vulnerabilities for manipulation and narcissistic tendencies [30]. On the other hand, parental monitoring acts as a significant protective factor, fostering traits like self-confidence, self-contentment, and selflessness [27]. Adolescents exposed to positive familial environments exhibit increased resilience, reducing their reliance on validation-seeking behaviors [29]. Additionally, the Validation Syndrome Diagnostic Triangle (VSDT) framework effectively maps the interplay between psychological drivers and environmental stressors, providing a diagnostic tool for early intervention [18].

The practical implications of this study are vast. First, integrating artificial intelligence (AI) tools using the VSDT framework can enhance behavioral forensics and criminal profiling by detecting early signs of manipulative or antisocial behaviors in high-risk adolescents [15],[14]. Community-based initiatives can train parents on authoritative parenting techniques to mitigate maladaptive traits [27]. Targeted socioeconomic interventions, such as family assistance programs, can alleviate the indirect impact of financial instability on adolescent personality development [59]. Schools can use AI-driven behavioral analytics to identify at-risk students for early intervention [46], while therapeutic applications of the VSDT framework can provide personalized interventions for adolescents exhibiting early signs of antisocial traits [18]. By incorporating forensic cyberpsychology insights, policymakers can create culturally sensitive programs that address both offline and digital manifestations of dark personality traits [17]. Emerging evidence highlights how adolescent engagement with digital platforms often mirrors offline behavioral tendencies, particularly in individuals exhibiting Dark Triad traits; these traits correlate strongly with cyberbullying, trolling, and other deceptive behaviors in online environments, where anonymity and reduced accountability amplify manipulative tendencies [90]. Public health campaigns can raise awareness about the role of familial dynamics in shaping adolescent personality development, emphasizing preventive strategies [12]. Additionally, cultural adaptations of interventions can account for norms influencing the expression of Dark and Light Triad traits [91]. Strategies to moderate technology's role in reinforcing narcissistic traits, such as through social media, are also crucial [41]. The findings of this study underscore the value of forensic cyberpsychology in designing targeted interventions to prevent cyber-related manipulations by adolescents exhibiting Dark Triad traits [17]. Resilience-building activities like mindfulness and empathy training in schools and community centers can promote prosocial development [29]. Finally, advocacy for early detection tools and evidence-based interventions within public health and education systems can significantly reduce the societal burden of antisocial behaviors [15].

10. Recommendations for Future Research

Future research should focus on conducting longitudinal studies to track the progression of Dark and Light Triad traits across different developmental stages [12]. Validation of the VSDT framework across diverse cultural settings is necessary to assess its universal applicability [18]. Investigating the neurobiological underpinnings of validation-seeking behaviors can deepen understanding of their origins, and future research should explore the integration of forensic cyberpsychology and neurobiological measures to deepen our understanding of the mechanisms underpinning antisocial behaviors in digital environments [47]. AI and machine learning models should be explored to refine predictive tools for identifying at-risk adolescents [46]. Tailored intervention programs based on the VSDT framework should be tested in clinical and educational settings [27]. Qualitative and mixed-method designs can capture the nuanced experiences of adolescents in various familial and environmental contexts [59]. Finally, policy impact studies should assess the long-term societal impacts of these research-derived policies, focusing on public health and education outcomes [15].

By addressing these areas, future research can build on the foundational insights of this study, advancing the understanding and mitigation of antisocial personality traits in adolescents.

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