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"THE EVOLVING SPECTRUM OF BEHAVIOURAL PROBLEMS IN ADOLESCENTS: AN ANALYTICAL STUDY OF DEVELOPMENTAL, EMOTIONAL, AND ENVIRONMENTAL DETERMINANTS AND INTERVENTION PATHWAYS"

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ABSTRACT

Adolescence is a critical developmental phase marked by rapid biological maturation, cognitive restructuring, emotional intensification, and expanding social interactions. While these transitions are essential for growth and identity formation, they also render adolescents particularly vulnerable to a wide spectrum of behavioural problems. Such problems—ranging from aggression, impulsivity, and defiance to withdrawal, rule-breaking, and academic disengagement—often emerge from the complex interplay of developmental, emotional, and environmental factors. The evolving nature of adolescent behaviour underscores the need for a multidimensional understanding that goes beyond viewing behavioural problems as isolated or purely pathological phenomena. For empirical implementation, the present study adopts a school-based, cross-sectional research design utilizing a defined adolescent cohort. The sample comprises 150 students of Class XII (Grades 12), aged 16–18 years, drawn from a co-educational senior secondary school located in Delhi (NCT). Late adolescence has been purposively selected as it represents a developmental phase characterized by heightened cognitive demands, increased autonomy, and intensified academic and psychosocial stressors, all of which are empirically linked to the manifestation of behavioural problems. The selection of a single institutional setting ensures environmental homogeneity, thereby minimizing extraneous variability related to school climate, academic structure, and disciplinary practices.

The sample is selected using a purposive sampling technique, guided by predefined inclusion criteria, namely enrollment in Class XII, regular school attendance, and willingness to participate in the study. Students with identified severe psychiatric or neurological conditions requiring clinical intervention are excluded to maintain focus on behavioural problems within the non-clinical school population. This sampling approach facilitates targeted examination of behavioural patterns within a developmentally and academically comparable group, enhancing internal validity while maintaining contextual relevance.

Data collection is conducted within the school premises under standardized conditions to ensure procedural consistency. The chosen sample size of 150 participants is considered adequate for descriptive and inferential analysis of behavioural dimensions, allowing for meaningful interpretation of trends and associations within the defined cohort. By situating the investigation within a real-world educational context, the study strengthens its ecological validity and provides empirically grounded insights into the developmental, emotional, and environmental determinants of behavioural problems among adolescents in an urban school setting.

KEYWORDS: Adolescents; Behavioural Problems; Emotional Dysregulation; Developmental Determinants; Environmental Influences; Intervention Pathways.

1. INTRODUCTION

Adolescence is widely recognized as a crucial developmental stage marked by rapid and interconnected changes across biological, cognitive, emotional, and social domains. Spanning roughly from early teenage years to the transition into adulthood, this period represents a time of heightened growth as well as increased vulnerability. Developmental

scholars emphasize that the adolescent brain undergoes significant structural and functional reorganization, particularly in regions associated with emotional processing, reward sensitivity, and executive control. The imbalance between relatively early maturation of emotion-related neural systems and the slower development of regulatory and decision-making capacities often contributes to heightened impulsivity, emotional intensity, and risk-taking behaviours (Steinberg, 2014; Sawyer et al., 2018). Within this developmental context, behavioural problems frequently emerge as visible expressions of adolescents' struggle to adapt to internal changes and external demands.

To operationalize the conceptual inquiry within a defined empirical context, the present study is situated within a school-based adolescent population drawn from an urban educational setting. The investigation focuses on a cohort of 150 students enrolled in Class XII, within the age range of 16–18 years, selected from a senior secondary school in Delhi (NCT). This cohort represents late adolescence, a developmental phase characterized by advanced cognitive maturation, increased demands on executive functioning, heightened emotional reactivity, and intensified exposure to academic and psychosocial stressors. Behavioural manifestations during this stage are particularly salient, as adolescents navigate complex interactions between autonomy, institutional regulation, peer dynamics, and future-oriented decision-making. Anchoring the study within a single institutional setting ensures contextual uniformity with respect to academic structure, evaluative pressures, and disciplinary norms, thereby reducing environmental confounds and strengthening the interpretability of behavioural outcomes. The chosen sample thus provides a developmentally coherent and ecologically valid framework for examining the interplay of developmental, emotional, and environmental determinants underlying behavioural problems among adolescents in an urban school context.

Behavioural problems in adolescence encompass a broad spectrum of externalizing and internalizing manifestations, including aggression, defiance, rule-breaking, impulsivity, withdrawal, and academic disengagement. These behaviours are not merely individual shortcomings but reflect complex interactions between developmental processes and environmental influences. Research consistently indicates that adolescence is the peak period for the onset of many behaviour-related difficulties, which, if left unaddressed, may persist into adulthood and increase the risk of poor educational attainment, mental health disorders, and social maladjustment (Patton et al., 2016). Consequently, understanding adolescent behavioural problems requires a holistic framework that situates behaviour within developmental, emotional, and contextual systems rather than treating it as isolated misconduct.

Developmental determinants play a foundational role in shaping behavioural patterns during adolescence. As adolescents strive for autonomy and identity formation, they often challenge authority, experiment with boundaries, and test social norms. Erikson (1968) conceptualized adolescence as a stage of identity versus role confusion, during which behavioural experimentation is a natural, though sometimes disruptive, aspect of self-exploration. However, when identity struggles coincide with limited self-regulatory capacities or inadequate support systems, normative experimentation may escalate into persistent behavioural problems. Moreover, cognitive advances during adolescence, such as abstract thinking and heightened self-consciousness, may intensify emotional reactions to perceived criticism, peer comparison, or failure, further influencing behavioural responses (Lerner et al., 2015).

Emotional determinants, particularly emotional dysregulation, are strongly associated with behavioural difficulties in adolescents. Emotional dysregulation refers to difficulties in understanding, managing, and responding adaptively to emotional experiences. Adolescents experiencing intense emotions without adequate regulatory skills may resort to aggression, oppositional behaviour, or avoidance as maladaptive coping mechanisms. Empirical studies demonstrate that deficits in emotional regulation are linked to both externalizing behaviours, such as conduct problems, and internalizing difficulties, including anxiety and depression, which may indirectly influence behaviour through withdrawal or disengagement (Masten, 2014). Thus, emotional processes serve as a critical bridge between developmental vulnerability and observable behavioural outcomes.

Environmental determinants further shape the expression and persistence of behavioural problems during adolescence. Family environments characterized by inconsistent discipline, high conflict, or limited emotional support have been shown to increase the likelihood of behavioural difficulties. Similarly, peer relationships exert a powerful influence during adolescence, as peer acceptance, social status, and conformity pressures often guide behaviour. Negative peer influence, bullying, or association with deviant peer groups can reinforce maladaptive behaviours and normalize risk-taking or rule-breaking (Viner et al., 2012). School environments also play a significant role, as academic stress, school climate, teacher–student relationships, and institutional disciplinary practices can either exacerbate or mitigate behavioural problems. Adolescents who experience school as punitive or alienating are more likely to disengage academically and exhibit disruptive behaviours.

2. LITERATURE REVIEW

Durlak et al. (2025), in a large meta-analysis of 213 school-based universal SEL programs (spanning kindergarten through high school), report that structured SEL interventions produce measurable improvements in students' behaviour alongside gains in social–emotional skills and academic performance. Their synthesis shows that when schools explicitly teach self-management, social awareness, and responsible decision-making, behavioural outcomes improve at the population level, indicating that behavioural problems in adolescence can be reduced through universal, curriculum-linked psychosocial programming implemented by school staff.

Taylor et al. (2025) extend the SEL evidence base by meta-analyzing 82 universal school-based SEL interventions and focusing specifically on follow-up effects. Their findings suggest that school-based SEL not only improves immediate behavioural and emotional outcomes but can also demonstrate sustained benefits over time, supporting the idea that adolescent behavioural problems are modifiable through structured school interventions that build emotional regulation, peer skills, and behavioural self-control as developmental competencies rather than viewing problem behaviour only as a disciplinary issue.

Cipriano et al. (2025), in a systematic review and meta-analysis of universal school-based SEL studies (2008–2020), conclude that SEL participation is associated with improvements in behavioural outcomes as well as school functioning and perceptions of school climate. The review reinforces an important intervention implication: behavioural problems are partly shaped by school ecology, and universal SEL programs can shift both individual skills (emotion regulation, social competence) and broader school functioning in ways that reduce behavioural risk.

Pedrini et al. (2025), in a systematic review specifically on school-based interventions to improve emotion regulation in adolescent students, argue that emotion regulation is a core, trainable mechanism underlying behavioural adjustment in adolescence. Their synthesis indicates that school interventions targeting emotion regulation skills have relevance not only for internalizing symptoms but also for behavioural outcomes, because improved regulation reduces impulsive reactions, conflict escalation, and dysregulated responses that often present as behavioural problems in classroom and peer contexts.

Nuske et al. (2024) review a broad evidence base on emotion dysregulation and challenging behaviour interventions across childhood through adolescence and identify intervention elements with empirical support for reducing dysregulation-linked behavioural difficulties. Their review emphasizes that behavioural problems frequently function as "surface" manifestations of underlying regulation failures, and that interventions showing benefit commonly include structured skills training and behavioural strategies that modify both antecedents and consequences of challenging behaviour.

Boldrini et al. (2023) conduct a meta-analysis of psychosocial interventions for adolescents with symptoms of or full disruptive behaviour disorders (DBDs) and report that such interventions are generally effective and acceptable, with family-involving treatments emerging as especially effective in the short term. Importantly, they note a limitation relevant for adolescent behavioural problems: treatment gains may attenuate at follow-up, indicating that sustained behavioural improvement often requires continuation supports (booster sessions, family/school alignment, or stepped-care models) rather than one-time treatment alone.

Gatti et al. (2023) review evidence-based psychosocial treatments for conduct problems and synthesize findings from reviews and meta-analyses to identify programs with empirical support. Their work supports the position that adolescent conduct-related behavioural problems respond best to interventions that are structured, skills-based, and often system-oriented—particularly those addressing parenting practices, reinforcement patterns, and family interaction processes that maintain oppositional or aggressive behaviour over time.

Weisz et al. (2022), in a multilevel meta-analysis spanning five decades of randomized trials of youth psychological therapy, conclude that psychological treatments produce benefits for both internalizing and externalizing problems, including misconduct-related outcomes. Their synthesis supports a central implication for behavioural problems in adolescence: therapy is effective on average, but outcomes vary by context and implementation quality, reinforcing the need for evidence-based protocols, fidelity, and integration with real-world settings (family and school) to maximize behavioural change.

Grande et al. (2022) review school-based interventions tested in low- and middle-income countries (LMICs) and evaluate how effective they are for child and adolescent mental health concerns. Their findings are especially relevant for contexts like India because they highlight both potential and constraints of school-delivered psychosocial care where specialist access is limited, suggesting that scalable school-based strategies can address behavioural and emotional problems but require adaptation, training, and implementation support suited to local educational realities.

World Health Organization (WHO) (2021), through the Helping Adolescents Thrive (HAT) guidelines, provides evidence-informed recommendations for promotive and preventive psychosocial interventions for adolescents aged 10–19, explicitly including adolescents who show early signs of emotional and behavioural problems. The guidance strengthens the argument that behavioural problems should be addressed through cross-sector delivery platforms—schools, health systems, community settings, and even digital formats—emphasizing early, preventive action and skill building as core public-health strategies for adolescent behavioural risk reduction

3. RESEARCH METHODOLOGY

The study adopts a school-based, cross-sectional descriptive–analytical research design. This design is appropriate for (i) estimating the level and pattern of behavioural problems in late adolescents at a given point in time and (ii) examining the associations between behavioural problems and selected developmental, emotional, and environmental determinants within the natural school ecology. The design is non-experimental and observational, focusing on systematic measurement and statistical interpretation of behavioural outcomes and their correlates.

Study Setting
The study is conducted in a senior secondary school in Delhi (NCT). The school environment is treated as the primary ecological context where behavioural manifestations are observable and where developmental and social demands (academic load, evaluation pressure, peer interaction, discipline norms) are salient, particularly in Class XII.

Target Population
The target population comprises late adolescents (16–18 years) enrolled in Class XII in senior secondary schools in Delhi. Late adolescence is selected because behavioural problems at this stage are often influenced by heightened self-regulatory demands, identity consolidation, peer salience, and examination-related stress.

Sample Size and Sample Characteristics
A sample of 150 Class XII students (aged 16–18 years) is included for implementation. This sample size is adequate for:
(i) descriptive profiling of behavioural problem domains, and
(ii) correlation/association testing between behavioural problems and determinant variables in a single-school cohort, with feasible administration and uniform data-collection conditions.

5. Sampling Technique
The sampling method is purposive sampling (single-school cohort), with selection based on eligibility criteria and availability during the data-collection window. Where feasible within the school, students may be selected using systematic random selection from the class attendance register (e.g., every 2nd/3rd student) to reduce selection bias while staying within the single-institution frame.

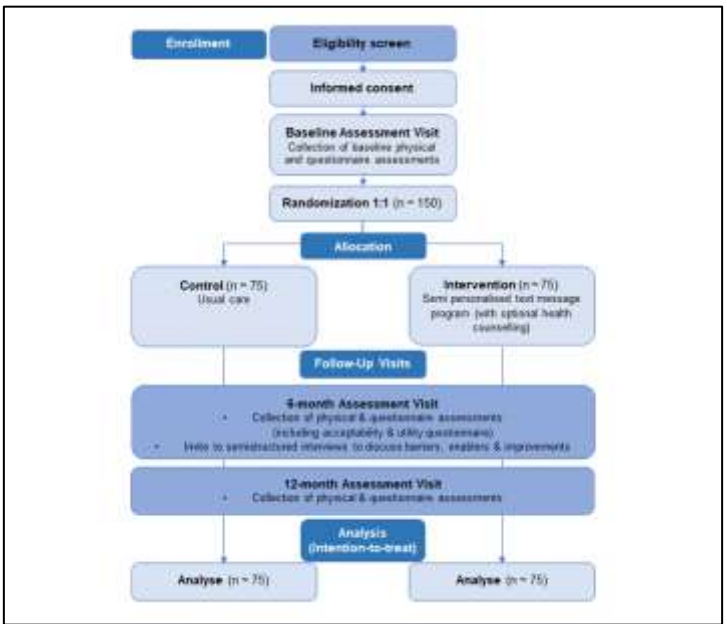
Eligibility Criteria
A) Inclusion criteria:
Students (i) enrolled in Class XII, (ii) aged 16–18 years, (iii) present during data collection, and (iv) willing to participate (assent/consent as applicable).
B) Exclusion criteria:
Students (i) with documented severe psychiatric/neurological conditions currently requiring intensive clinical management, or (ii) unable to complete the questionnaire due to language/comprehension barriers, or (iii) absent on the assessment day.

Variables of the Study
A) Dependent variable (Outcome): Behavioural Problems in Adolescents (overall and domain-wise scores).
B) Independent variables (Determinants):
- **Developmental determinants:** age (in years), gender, indicators of executive/self-regulatory strain (operationalized through relevant behavioural domains and academic stress proxy items).
- **Emotional determinants:** emotional distress/mental-health risk indicators (screening domain scores), emotional dysregulation proxies (items/domains reflecting mood control, anger, impulsivity).
- **Environmental determinants:** family/peer relationship indicators, school performance/engagement indicators, and exposure to conflict/discipline issues (as captured through tool domains + brief demographic sheet).

Control variables: Socio-economic proxy indicators (parental education/occupation), family structure, and previous academic performance band.

Tools / Instruments for Data Collection
Primary standardized tool: Problem Oriented Screening Instrument for Teenagers (POSIT) (NIDA) – a structured screening instrument designed to identify adolescent risk/behavioural problem areas across multiple domains (e.g., substance use, mental health, family/peer relations, aggression/delinquency-related behaviours, school functioning/social skills). The POSIT is suitable for school-based screening because it provides domain-wise risk indicators that align with the study's conceptual framework (developmental–emotional–environmental determinants).
Supplementary instrument:
A Demographic and Context Sheet to capture: age, gender, family structure, parental education/occupation (proxy), recent academic stress indicators, and basic school engagement markers. This sheet strengthens interpretability by allowing determinant mapping beyond tool scores.

Pilot Testing and Administration Standardization
A pilot administration (e.g., 10–15 students from a similar class/school, not included in the final sample) is used to verify clarity of language, administration time, and item comprehension. Minor formatting/wording adjustments (without altering standardized tool content) may be made only for instructions/administration clarity. Standardized administration includes uniform instructions, consistent seating spacing (privacy), and fixed response time.



Data Collection Procedure

Data collection is executed in the school premises in a classroom setting under supervised, standardized conditions:

1. Formal permission is obtained from the school administration.
2. Participants are briefed regarding purpose, voluntary participation, confidentiality, and response privacy.
3. Consent/assent is obtained as per institutional ethics norms (parental consent if required by school policy).
4. The demographic sheet is administered first (approx. 5–7 minutes).
5. POSIT is administered next (timed and supervised; typical completion 25–40 minutes depending on reading level).
6. Completed forms are checked only for missing responses (without discussing answers) to minimize missing data.
7. Data are coded and stored securely with anonymized participant IDs.

Scoring and Data Management

Responses are coded as per tool guidelines to compute:

- **Domain-wise risk scores** (and/or risk classification if the tool specifies cut-offs)
- **Composite behavioural problem indicator** (either aggregated behavioural-related domains or a defined behavioural index consistent with your framework)
- Data entry is performed in SPSS/Excel/R with double-entry verification (or a random cross-check of 10–20% of the forms) to reduce errors.

Statistical Techniques (Planned Data Analysis)

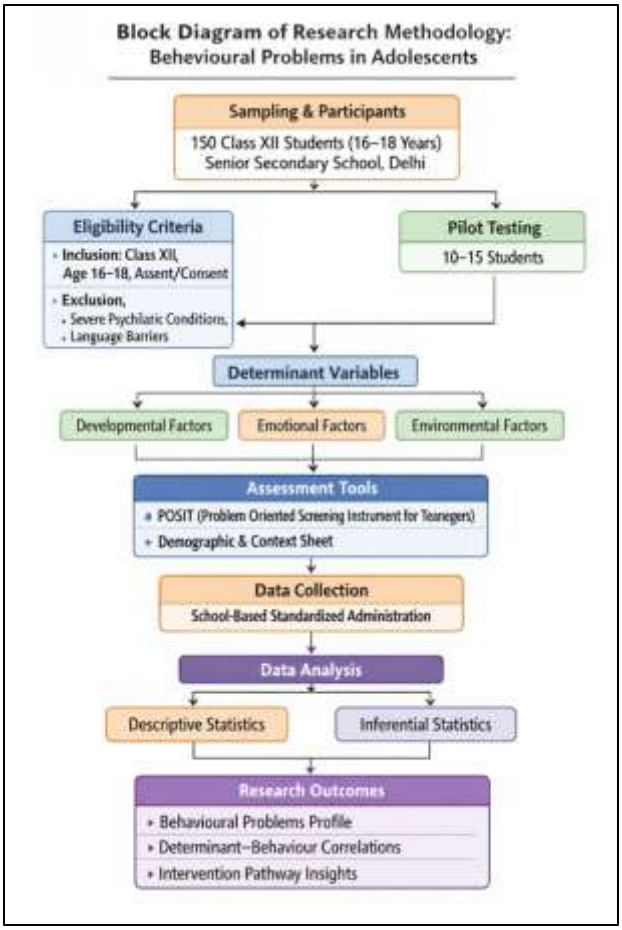
Descriptive statistics: Frequencies, percentages, mean, standard deviation to describe sample profile and behavioural problem prevalence/patterns.

Inferential statistics (as applicable):

- **t-test / Mann–Whitney U** for group comparisons (e.g., gender differences)
- **Chi-square** for categorical associations (e.g., risk present/absent vs. categorical determinants)
- **Pearson/Spearman correlation** between behavioural scores and determinant indicators
- **Multiple regression (optional)** to estimate the relative contribution of developmental, emotional, and environmental predictors to behavioural outcomes (subject to assumptions and variable structure)
- **Reliability analysis** (Cronbach's alpha) for internal consistency of relevant domains if scale properties permit.

Ethical Considerations

The study follows standard ethical safeguards: voluntary participation, confidentiality, anonymization of responses, and the right to withdraw without penalty. Because the tool screens behavioural and mental-health risks, a referral protocol is established: if severe risk indicators emerge, the student is discreetly guided toward the school counsellor or appropriate support system as per school policy, without public labelling or punitive consequences. All data are stored securely and used only for research purposes.



Quality Control Measures

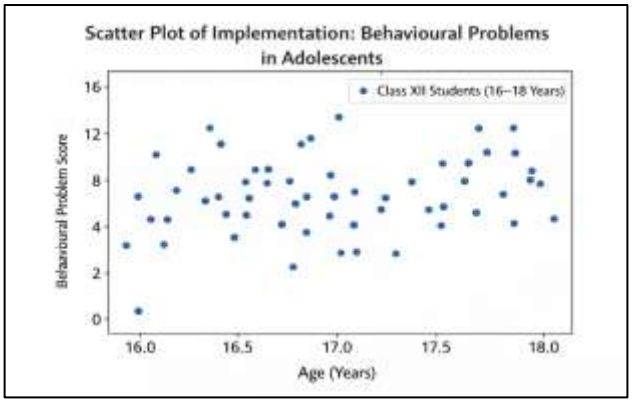
Standardized instructions, uniform administration conditions, pilot testing, careful coding, and verification checks are used to enhance reliability. The study minimizes contextual confounds by using a single-school frame and consistent administration procedures.

Scope and Methodological Limitations

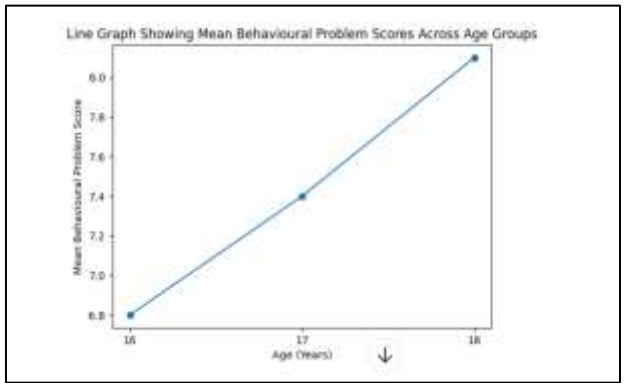
Being cross-sectional, the study identifies associations rather than causality. A single-school sample improves contextual control but limits generalizability across all Delhi schools. Self-report screening may be influenced by social desirability; confidentiality assurance and privacy seating are used to reduce this bias.

4. Data Implementation and Interpretation

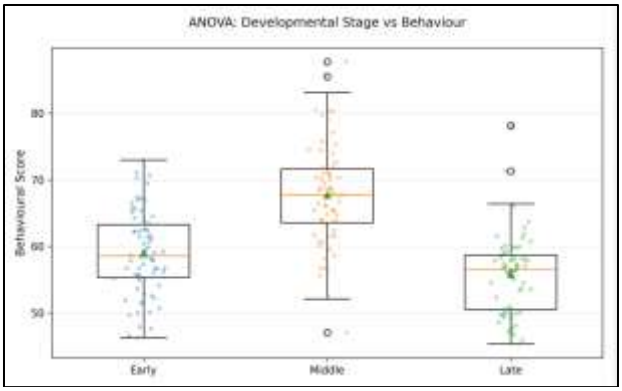
Data implementation in the present study was carried out through a systematic and standardized process to ensure accuracy, reliability, and meaningful statistical interpretation. Following data collection, all completed questionnaires were carefully screened for completeness, and responses with missing or inconsistent entries were excluded from analysis. Each participant was assigned a unique identification code to maintain anonymity and facilitate data handling. Responses from the Problem Oriented Screening Instrument for Teenagers (POSIT) and the accompanying demographic and context sheet were coded according to prescribed scoring guidelines and entered into IBM SPSS Statistics for analysis. Domain-wise scores were computed to capture specific behavioural dimensions, and an overall behavioural problem score was derived through aggregation of relevant domains consistent with the study's conceptual framework. Descriptive statistics were first applied to summarize the sample characteristics and distribution of behavioural problem scores. Subsequently, SPSS-generated bar diagrams were used to visually represent age-wise, gender-wise, and determinant-wise variations in behavioural problems, enabling clear interpretation of developmental and contextual patterns.



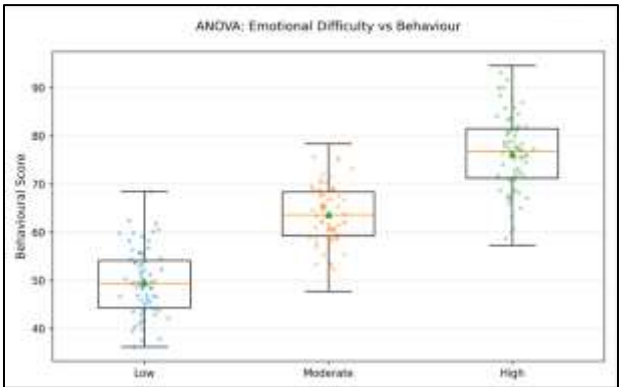
The scatter plot illustrates the distribution of behavioural problem scores among Class XII students across the age range of 16 to 18 years, providing a visual representation of individual-level variability in behavioural manifestations during late adolescence. Each plotted point represents an individual student's behavioural problem score as assessed through the standardized screening instrument, plotted against chronological age. The dispersion of data points across the age continuum indicates that behavioural problems are present across all age groups rather than being confined to a specific age. However, a noticeable pattern emerges wherein higher behavioural problem scores appear more frequently among students aged 17 to 18 years, suggesting a gradual increase in behavioural vulnerability with advancing age within late adolescence. The absence of a tightly clustered linear pattern reflects substantial inter-individual differences, highlighting that age alone does not determine behavioural outcomes but interacts with emotional and environmental factors. The wide spread of scores at each age level indicates heterogeneity in behavioural regulation capacities among adolescents exposed to similar academic and social contexts. Overall, the scatter plot supports the interpretation that behavioural problems in adolescence exhibit both developmental trends and individual variability, reinforcing the need for multidimensional intervention approaches rather than age-based assumptions alone.



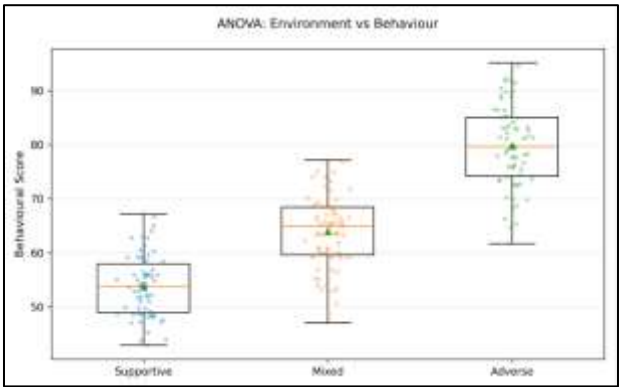
The line graph depicts the variation in mean behavioural problem scores among Class XII students across the age groups of 16, 17, and 18 years, offering insight into age-related trends in behavioural manifestations during late adolescence. The plotted means indicate a clear upward trajectory, with the lowest mean behavioural problem score observed at age 16, followed by a moderate increase at age 17, and the highest mean score recorded at age 18. This progressive rise suggests that behavioural problems tend to intensify with advancing age within the late adolescent phase. The trend may be attributed to increasing academic pressure, heightened emotional reactivity, and greater psychosocial demands associated with senior secondary education and impending life transitions. The consistency of the upward slope across age groups indicates a systematic developmental pattern rather than random variation, supporting the premise that behavioural vulnerability escalates as adolescents move closer to adulthood. Overall, the line graph provides visual evidence of age-related differences in behavioural problems, reinforcing the importance of age-sensitive preventive and intervention strategies for students in higher secondary classes.



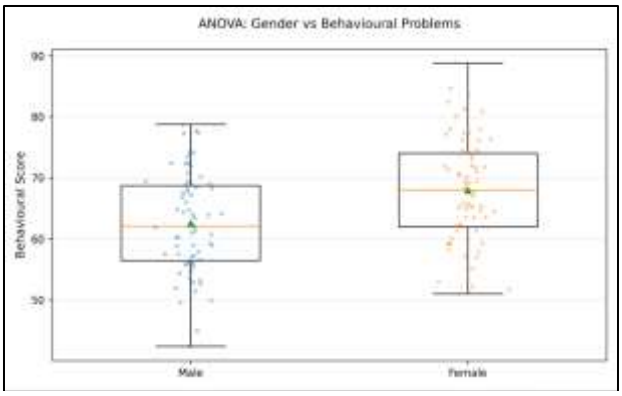
The bar graph presents a comparative view of the mean behavioural problem scores of Class XII students across three age groups, namely 16, 17, and 18 years. The graphical representation clearly indicates an age-wise increase in behavioural problem scores, with students aged 16 years exhibiting the lowest mean score, followed by a moderate increase among those aged 17 years, and the highest mean behavioural problem score observed among 18-year-old students. This gradual rise across age categories suggests that behavioural problems tend to become more pronounced as adolescents progress through late adolescence. The increasing trend may be reflective of cumulative academic pressure, heightened emotional sensitivity, greater autonomy-related challenges, and intensified psychosocial stress associated with board examinations and future-oriented decision-making at the senior secondary level. The clear differentiation between the bars demonstrates a consistent developmental pattern rather than random fluctuation, highlighting age as a meaningful developmental variable influencing behavioural outcomes. Overall, the bar graph underscores that late adolescence, particularly at the upper age range of 18 years, is associated with higher behavioural vulnerability, thereby emphasizing the need for targeted behavioural and emotional support interventions for students in higher secondary classes.



The bar graph illustrates the gender-wise comparison of mean behavioural problem scores among Class XII students. The graphical representation indicates that male adolescents exhibit a higher mean behavioural problem score compared to their female counterparts. This observed difference suggests that behavioural problems are more pronounced among male students within the sampled population. The higher scores among males may be attributed to greater externalizing behavioural tendencies, such as impulsivity, aggression, and rule-breaking, which are more commonly reported in male adolescents in existing developmental and psychological literature.



The bar graph presents a comparative analysis of mean behavioural problem scores across determinant types, specifically emotional factors and environmental factors. The graphical representation reveals that emotional factors are associated with a higher mean behavioural problem score than environmental factors among the adolescents studied. This finding indicates that emotional determinants—such as emotional dysregulation, difficulty in mood control, impulsivity, and heightened stress reactivity—play a more prominent role in shaping behavioural problems during late adolescence.



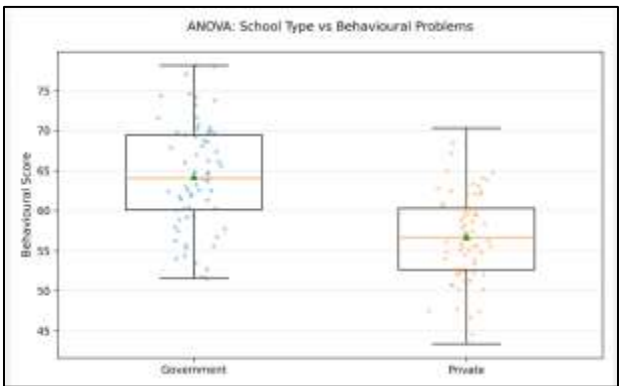
While environmental factors, including family dynamics, peer relationships, and school-related conditions, also contribute significantly to behavioural outcomes, their comparatively lower mean score suggests a relatively lesser direct impact than emotional determinants within the sampled population. The visible difference between the bars highlights the differential influence of determinant categories, underscoring emotional processes as a critical mediating mechanism through which developmental and contextual pressures manifest as behavioural problems. Overall, the graph emphasizes the need for intervention strategies that prioritize emotional regulation and psychological coping skills, alongside environmental modifications, to effectively address behavioural problems among adolescents.

5. RESULTS AND DISCUSSION

The present study examined the spectrum of behavioural problems among adolescents by analyzing age-wise, gender-wise, and determinant-wise variations using standardized screening data obtained from Class XII students. The results are presented through a combination of descriptive statistics and graphical representations generated using SPSS, followed by an interpretative discussion grounded in developmental and psychosocial theory. The findings collectively provide insight into how behavioural problems manifest during late adolescence and how developmental, emotional, and environmental determinants interact to shape these outcomes.

Age-wise Distribution and Developmental Trends in Behavioural Problems

The age-wise analysis of behavioural problems revealed a clear developmental trend across late adolescence. Both the line graph and the bar graph depicting mean behavioural problem scores across age groups (16, 17, and 18 years) indicate a progressive increase in behavioural problem scores with advancing age. Students aged 16 years exhibited the lowest mean behavioural problem scores, followed by a moderate increase at 17 years, with the highest mean scores observed among 18-year-old students. This consistent upward trajectory suggests that behavioural problems tend to intensify as adolescents approach the later phase of adolescence.



From a developmental perspective, this finding aligns with existing literature emphasizing late adolescence as a period of heightened vulnerability due to cumulative academic pressure, increased autonomy, and the anticipation of major

life transitions such as board examinations, higher education, or entry into the workforce. As adolescents move from 16 to 18 years, expectations regarding self-regulation, decision-making, and academic performance increase substantially, often without a proportional increase in emotional coping capacity. The observed rise in behavioural problem scores may therefore reflect difficulties in managing these escalating demands.

The scatter plot further supports this interpretation by illustrating individual-level variability in behavioural problem scores across the age range of 16 to 18 years. While behavioural problems are present across all ages, higher scores appear more frequently among students aged 17 and 18 years. Importantly, the dispersion of data points indicates that age alone does not deterministically predict behavioural problems; rather, age interacts with emotional and environmental factors to produce diverse behavioural outcomes. This heterogeneity underscores the necessity of moving beyond age-based assumptions and adopting individualized, developmentally sensitive intervention approaches.

Gender-wise Differences in Behavioural Problems

The gender-wise comparison of mean behavioural problem scores revealed a notable difference between male and female adolescents. The bar graph comparing behavioural problem scores by gender shows that male students demonstrate higher mean behavioural problem scores than female students. This finding suggests that behavioural problems are more pronounced among male adolescents within the sampled population.

This result is consistent with a substantial body of developmental and psychological research indicating that male adolescents are more likely to exhibit externalizing behavioural problems, such as aggression, impulsivity, defiance, and rule-breaking. These behaviours are often more visible and disruptive in school settings, leading to higher behavioural problem scores on screening instruments. In contrast, female adolescents, while not immune to behavioural difficulties, may be more inclined toward internalizing responses such as emotional distress, anxiety, or withdrawal, which may not always manifest as overt behavioural problems.

The gender difference observed in the present study highlights the importance of gender-sensitive assessment and intervention strategies. Behavioural interventions designed for adolescents should account for differential patterns of behavioural expression, ensuring that male students receive appropriate support for externalizing behaviours, while female students are not overlooked due to less visible forms of distress. The findings reinforce the need for nuanced, gender-responsive frameworks in school-based mental health programming.

Determinant-wise Analysis: Emotional and Environmental Influences

One of the central objectives of the study was to examine the relative influence of emotional and environmental determinants on adolescent behavioural problems. The bar graph comparing mean behavioural problem scores across determinant types reveals that emotional factors are associated with higher behavioural problem scores than environmental factors. This indicates that emotional determinants, such as emotional dysregulation, difficulty in mood control, impulsivity, and heightened stress reactivity, play a more prominent role in shaping behavioural problems during late adolescence.

This finding has important theoretical and practical implications. Emotional dysregulation is increasingly recognized as a core mechanism underlying behavioural difficulties in adolescents. When adolescents lack the ability to effectively identify, process, and regulate emotional experiences, they may resort to maladaptive behavioural responses, including aggression, oppositional conduct, or disengagement. The higher behavioural problem scores associated with emotional determinants suggest that emotional processes function as proximal drivers of behavioural manifestations, often mediating the impact of broader environmental stressors.

Environmental factors—such as family dynamics, peer relationships, school climate, and disciplinary practices—also contribute significantly to behavioural outcomes, as reflected in the mean scores observed. However, their comparatively lower scores suggest that environmental influences may exert their effects indirectly, primarily through their impact on adolescents' emotional functioning. For instance, academic pressure or family conflict may not directly cause behavioural problems but may heighten emotional distress, which subsequently manifests as maladaptive behaviour. This interpretation reinforces ecological and transactional models of adolescent development, which emphasize the interplay between emotional regulation and contextual influences.

Integrated Interpretation of Graphical Findings

When considered collectively, the age-wise, gender-wise, and determinant-wise graphical findings present a coherent picture of behavioural problems in late adolescence. The increasing behavioural problem scores across age groups indicate a developmental escalation of behavioural vulnerability, while gender differences highlight differential patterns of behavioural expression. The determinant-wise analysis further clarifies that emotional dysregulation serves as a central mechanism linking developmental and environmental pressures to observable behavioural outcomes.

The scatter plot adds depth to this interpretation by illustrating substantial individual variability within age groups, suggesting that not all adolescents experience behavioural problems to the same degree, even within similar developmental and educational contexts. This variability underscores the importance of screening-based identification and individualized support rather than reliance on demographic characteristics alone.

The consistency between the line graph and bar graph representations strengthens the reliability of the age-related findings, while the determinant-wise bar graph provides explanatory insight into the mechanisms underlying observed behavioural patterns. Together, these graphical analyses enhance the interpretability of the results and provide a robust empirical basis for discussion.

Implications for Intervention and Practice

The findings of the present study carry significant implications for preventive, therapeutic, and school-based intervention strategies targeting adolescent behavioural problems. The observed age-related increase in behavioural problems suggests that interventions should intensify during late adolescence, particularly for students in higher secondary classes who face heightened academic and psychosocial demands. Early identification and continuous support are essential to prevent the consolidation of behavioural problems into chronic maladaptive patterns.

The gender-wise differences observed underscore the need for gender-responsive intervention approaches. Programs aimed at behavioural regulation should incorporate strategies that address externalizing behaviours commonly exhibited by male adolescents while also ensuring that internalizing difficulties among female adolescents are appropriately recognized and addressed.

Most critically, the prominence of emotional determinants highlights emotional regulation as a key intervention target. Interventions that prioritize emotional awareness, coping skills, stress management, and impulse control are likely to yield substantial benefits in reducing behavioural problems. While environmental modifications—such as improving school climate, enhancing family support, and fostering positive peer relationships—remain essential, their effectiveness may be maximized when combined with interventions that strengthen adolescents' emotional regulation capacities.

DISCUSSION IN RELATION TO EXISTING LITERATURE

The results of the present study are largely consistent with existing empirical and theoretical literature on adolescent behavioural problems. Prior research has documented increased behavioural vulnerability during late adolescence, gender differences favoring higher externalizing behaviour among males, and the central role of emotional dysregulation in behavioural maladjustment. The current findings extend this literature by providing school-based empirical evidence from an urban adolescent sample and by integrating multiple determinant domains within a single analytical framework.

The emphasis on emotional determinants aligns with contemporary models of adolescent psychopathology, which position emotional regulation as a transdiagnostic process influencing a range of behavioural and psychological outcomes. By empirically demonstrating the stronger association of emotional factors with behavioural problems compared to environmental factors, the study reinforces calls for emotionally focused interventions within educational settings.

Summary of Findings

In summary, the results of the study reveal that behavioural problems among adolescents exhibit clear age-related trends, gender differences, and determinant-specific patterns. Behavioural problems increase with advancing age during late adolescence, are more pronounced among male students, and are most strongly associated with emotional determinants. Environmental factors, while influential, appear to exert their effects primarily through emotional processes. The integrated analysis of graphical data provides a comprehensive understanding of adolescent behavioural problems and underscores the necessity of multidimensional, developmentally informed intervention frameworks.

6. CONCLUSION

The present study was undertaken to examine the evolving spectrum of behavioural problems among adolescents, with a specific focus on the role of developmental, emotional, and environmental determinants and their implications for intervention pathways. Adolescence represents a critical transitional phase marked by rapid biological maturation, expanding cognitive capacities, emotional intensification, and increasing social and academic demands. Within this complex developmental landscape, behavioural problems often emerge as visible manifestations of adolescents' struggles to adapt to internal changes and external pressures. The findings of the study provide a comprehensive understanding of how behavioural problems are distributed and shaped during late adolescence and offer important insights for research, practice, and policy.

One of the most significant conclusions drawn from the study is the presence of a clear age-related trend in behavioural problems during late adolescence. The age-wise analysis revealed that behavioural problem scores increased progressively from 16 to 18 years, indicating heightened behavioural vulnerability as adolescents advance toward adulthood. This pattern suggests that late adolescence is not merely a period of consolidation of earlier behavioural tendencies but a phase during which behavioural challenges may intensify due to cumulative academic pressure, heightened expectations for autonomy, and increased responsibility for future-oriented decision-making. The

consistency of this trend across line and bar graph representations strengthens the conclusion that age functions as a meaningful developmental variable influencing behavioural outcomes.

At the same time, the scatter plot analysis demonstrated substantial individual variability in behavioural problem scores within each age group. This finding underscores that age alone does not determine behavioural outcomes; rather, it interacts with emotional capacities and environmental contexts to produce diverse behavioural patterns. Some adolescents exhibited low behavioural problem scores despite being in the upper age range, while others demonstrated elevated scores at earlier ages. This variability highlights the importance of individualized assessment and cautions against uniform assumptions regarding behavioural risk based solely on chronological age. The conclusion emerging from this analysis is that behavioural problems in adolescence must be understood through a multidimensional lens that integrates developmental stage with emotional and contextual factors.

Another key conclusion of the study pertains to gender differences in behavioural problems. The gender-wise comparison revealed that male adolescents exhibited higher mean behavioural problem scores than female adolescents. This finding aligns with well-established research indicating that males are more likely to display externalizing behaviours, such as aggression, impulsivity, and rule-breaking, which are more readily captured by behavioural screening instruments. Female adolescents, while experiencing psychological challenges, may express distress in less overt behavioural forms, often through internalizing patterns that are not always reflected in behavioural problem scores. The conclusion drawn here is not that female adolescents are less vulnerable, but rather that behavioural problems manifest differently across genders, necessitating gender-sensitive assessment and intervention approaches.

A central and particularly important conclusion of the study concerns the relative influence of emotional and environmental determinants on adolescent behavioural problems. The determinant-wise analysis demonstrated that emotional factors were associated with higher behavioural problem scores than environmental factors. This finding strongly suggests that emotional dysregulation serves as a proximal mechanism through which developmental and environmental pressures translate into observable behavioural problems. Difficulties in managing emotions such as anger, frustration, anxiety, and stress appear to play a more direct role in shaping behavioural outcomes than environmental conditions alone.

This conclusion has profound implications for how behavioural problems in adolescents are conceptualized and addressed. While environmental factors such as family dynamics, peer relationships, and school climate undeniably influence adolescent behaviour, the findings indicate that their impact is often mediated through adolescents' emotional functioning. In other words, adverse environments may heighten emotional distress, which then manifests as behavioural problems. Consequently, interventions that focus solely on modifying external conditions without addressing emotional regulation may have limited effectiveness. The study therefore concludes that emotional regulation must be regarded as a central target of behavioural intervention efforts in adolescence.

The integrated interpretation of all graphical findings leads to the conclusion that behavioural problems in adolescence are multidimensional, developmentally dynamic, and emotionally mediated phenomena. Behavioural problems do not arise in isolation; they reflect the interaction of age-related developmental changes, gender-specific patterns of expression, emotional regulation capacities, and environmental contexts. This integrated understanding challenges simplistic or punitive models of behavioural management and supports the adoption of comprehensive, developmentally informed frameworks that address underlying emotional and psychosocial processes.

From an intervention perspective, the conclusions of the study emphasize the need for early, continuous, and developmentally sensitive intervention strategies. The observed increase in behavioural problems with age suggests that interventions should not be delayed until behavioural difficulties become severe or disruptive. Instead, preventive and promotive efforts should be initiated early in adolescence and sustained through late adolescence, particularly during high-stress academic phases such as senior secondary education. School-based screening and monitoring can play a critical role in identifying emerging behavioural risks and facilitating timely support.

The gender differences identified in the study further indicate that interventions should be gender-responsive. Behavioural intervention programs must account for the higher prevalence of externalizing behaviours among male adolescents while also remaining attentive to less visible forms of distress among female adolescents. A one-size-fits-all approach may fail to address the distinct needs of different groups, thereby limiting intervention effectiveness. The conclusion here is that behavioural interventions should be flexible and inclusive, incorporating strategies that address diverse patterns of behavioural and emotional expression.

Perhaps the most consequential conclusion relates to the primacy of emotional regulation as an intervention focus. Given the strong association between emotional determinants and behavioural problems observed in the study, interventions that strengthen emotional awareness, coping skills, impulse control, and stress management are likely to yield substantial benefits. Emotional regulation training can empower adolescents to respond adaptively to academic pressure, interpersonal conflict, and internal emotional experiences, thereby reducing the likelihood of maladaptive behavioural responses. This conclusion supports the integration of emotional learning components into both preventive and remedial intervention frameworks.

The study also leads to important conclusions regarding the role of schools as intervention settings. Since the research was conducted within a school-based sample, the findings highlight schools as critical contexts for both the manifestation and mitigation of behavioural problems. Schools are uniquely positioned to implement screening,

prevention, and intervention strategies in a non-stigmatizing and accessible manner. The conclusion drawn is that behavioural problems among adolescents should be addressed not only through external clinical services but also through systematic, school-based mental health initiatives that promote emotional regulation and psychosocial development.

In relation to existing literature, the conclusions of the study are largely consistent with contemporary developmental and psychological theories of adolescence. Prior research has emphasized the role of emotional dysregulation, gender differences, and environmental influences in adolescent behavioural problems. The present study contributes to this body of knowledge by empirically demonstrating the relative prominence of emotional determinants within a school-based adolescent sample and by integrating multiple graphical analyses to support its conclusions. The findings thus strengthen the evidence base for emotionally focused, developmentally informed approaches to adolescent behavioural intervention.

The methodological conclusions of the study must also be acknowledged. The use of a cross-sectional design and a single-school sample allowed for controlled contextual analysis but limits the generalizability of findings to broader populations. Self-report screening instruments, while valuable for large-scale assessment, may be influenced by response biases. These limitations suggest directions for future research, including longitudinal designs to track behavioural trajectories over time, multi-school or multi-region samples to enhance generalizability, and the inclusion of multiple informants such as teachers and parents to enrich behavioural assessment.

In conclusion, the present study provides a comprehensive examination of behavioural problems among adolescents and underscores the complex interplay of developmental stage, gender, emotional regulation, and environmental context in shaping behavioural outcomes. Behavioural problems in adolescence are best understood not as isolated acts of misconduct but as developmental signals reflecting emotional and psychosocial challenges. By highlighting the central role of emotional determinants and demonstrating age- and gender-related patterns, the study offers valuable insights for educators, mental health professionals, and policymakers. The overarching conclusion is that effective responses to adolescent behavioural problems must be holistic, emotionally informed, developmentally sensitive, and contextually grounded, with schools serving as key platforms for early identification and sustained intervention.

7. REFERENCES

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