

ADOLESCENT AGGRESSION IN SCHOOL CONTEXTS AND ITS PSYCHOLOGICAL CORRELATES

Laiba Asghar^{*1}, Dr. Bilal Ahmad Lone²

^{*1,2}Lincoln University of Malaysia

¹laibaasghar291@gmail.com, ²Lonebilal@lincoln.edu.my

DOI: <https://doi.org/10.5281/zenodo.23102985>

Keywords

adolescence, aggression, anxiety, emotion regulation, emotional intelligence, self-esteem, Pakistan

Article History

Received: 19 January 2026

Accepted: 04 March 2026

Published: 18 March 2026

Copyright @Author

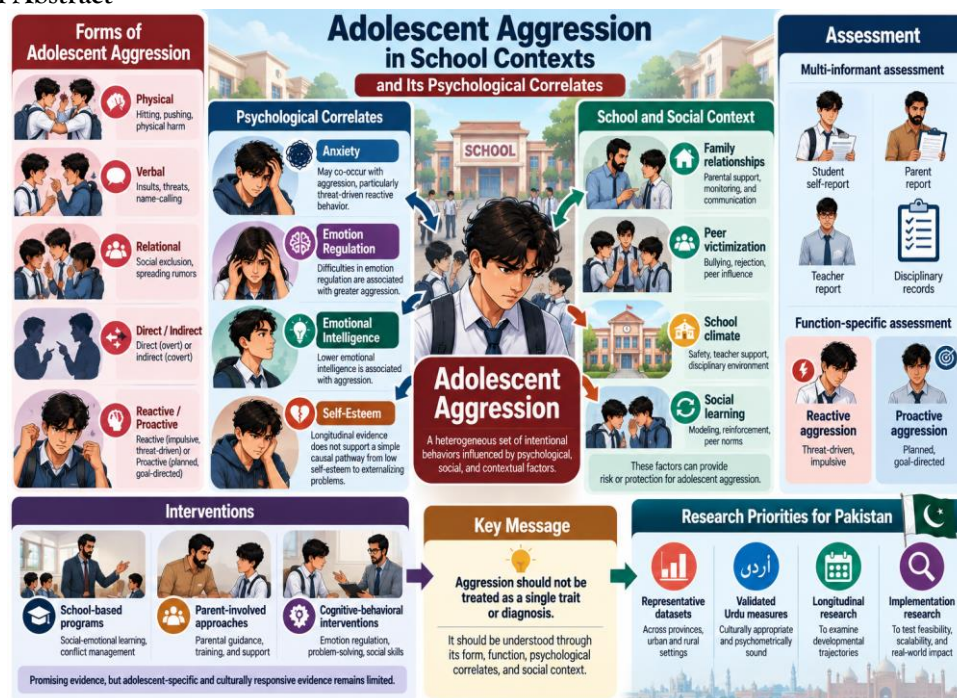
Corresponding Author: *

Laiba Asghar

Abstract

Adolescent aggression is a heterogeneous set of intentional behaviors: physical, verbal, relational, direct, indirect, reactive, or proactive. This narrative review synthesizes theory, measurement research, longitudinal evidence, meta-analyses, and Pakistani studies to clarify contextual correlates of aggression in school-age adolescents. Evidence indicates that aggression should not be treated as a single trait or diagnosis. Anxiety may co-occur with aggression, particularly threat-driven reactive behavior, but directionality varies. Difficulties in emotion regulation and lower emotional intelligence are associated with aggression, although much evidence is correlational. Recent longitudinal meta-analysis does not support a causal claim that low self-esteem produces externalizing problems. Family relationships, peer victimization, school climate, and social learning provide contexts for risk and protection. Multi-informant assessment and differentiation of aggressive functions are recommended. School-based, parent-involved, and cognitive-behavioral interventions show promise, but adolescent-specific and culturally responsive evidence remains limited. Priorities for Pakistan include representative data, validated Urdu measures, longitudinal designs, and implementation research.

Graphical Abstract



INTRODUCTION

Aggression during adolescence is consequential for students, peers, families, and schools, yet the term is often used too broadly. In psychological research, aggression generally refers to behavior carried out with the proximate intention of harming another person who is motivated to avoid that harm (Anderson & Bushman, 2002). Harm can be physical, verbal, social, or relational. This definition separates aggression from anger, which is an emotion, and from assertiveness, which can be firm without intending harm. It also distinguishes aggression from accidental injury. Violence is usually treated as a severe form of physical aggression, whereas bullying additionally requires repetition or a likelihood of repetition and a power imbalance. These distinctions matter because a student who reacts impulsively to a perceived threat may need a different formulation and response from a student who uses planned intimidation to obtain status or resources.

Adolescence is a period of expanding autonomy, stronger peer salience, changing family relationships, and continuing development of self-regulation. These changes create opportunities for growth but can also amplify conflict when biological sensitivity, learned behavior, cognitive biases, and stressful environments converge. Developmental evidence suggests that direct aggression declines for many young people across adolescence, while a smaller subgroup shows persistent or otherwise concerning patterns (Cleverley et al., 2012; Meeus et al., 2016; Moffitt, 1993). A developmental perspective therefore avoids labeling all conflict as pathology and focuses instead on persistence, severity, function, context, impairment, and risk to self or others. The topic is especially relevant to school systems because aggression and its consequences unfold across classrooms, peer networks, homes, neighborhoods, and digital spaces. A student may be a perpetrator in one setting and a target in another; self-report, teacher report, peer nominations, and disciplinary records may therefore yield different but valid information. Cross-informant disagreement is not simply measurement error: it can reflect genuine situational specificity (Achenbach et al., 1987).

Effective scholarship and practice should consequently resist single-cause explanations and treat aggressive behavior as a developmental and ecological phenomenon.

This review updates and narrows an earlier broad discussion of aggression and anxiety by placing aggression at the center of analysis. It synthesizes conceptual models, developmental evidence, psychological correlates, Pakistani school-based findings, assessment principles, and intervention research. Particular attention is given to anxiety, emotion regulation, emotional intelligence, and self-esteem because these variables are frequently discussed as correlates or potential intervention targets. The review does not equate association with causation and does not present aggression as a psychiatric diagnosis in itself.

2. Review Objectives

The review has five objectives. First, it clarifies major forms and functions of adolescent aggression. Second, it examines how developmental and psychological theories explain the initiation and maintenance of aggressive behavior. Third, it evaluates evidence concerning anxiety, emotion regulation, emotional intelligence, self-esteem, family relationships, peer experiences, and school climate. Fourth, it considers what can and cannot be inferred from the limited Pakistani evidence base. Fifth, it translates the evidence into cautious recommendations for assessment, prevention, intervention, and future research in secondary-school contexts.

3. Method

A structured narrative-review approach was used. Targeted searches were conducted through PubMed and publisher databases and were supplemented by backward citation checking. Search concepts combined adolescent or youth with aggression, physical aggression, relational aggression, reactive aggression, proactive aggression, anxiety, emotion regulation, emotional intelligence, self-esteem, parent-child relationship, peer victimization, school connectedness, Pakistan, assessment, prevention, and intervention. Literature available through September 9, 2026, was considered. Priority was given to meta-analyses, systematic reviews, longitudinal studies, original

scale-development papers, and peer-reviewed studies conducted in Pakistan. Foundational theoretical papers were retained when they remained necessary to define constructs or interpret newer evidence.

The synthesis was organized conceptually rather than by a pooled quantitative estimate. Studies were included when they addressed school-age children or adolescents, clearly operationalized aggression or a closely related externalizing outcome, and contributed to definition, explanation, assessment, or intervention. Adult-only and forensic-only studies were not emphasized because their applicability to community school populations is limited. No formal PRISMA flow diagram, duplicate screening, preregistered protocol, or study-level risk-of-bias instrument was used. Accordingly, this article should be read as a critical narrative review rather than a systematic review. Numerical findings are reported only when they illuminate the strength or limitations of the available evidence.

4. Conceptualizing Adolescent Aggression

Aggression can be classified by form. Physical aggression includes behaviors such as hitting, pushing, or threatening physical harm. Verbal aggression includes insults or threats. Relational aggression aims to damage relationships or social standing through exclusion, rumor spreading, or manipulation (Crick & Grotpeter, 1995). Direct aggression confronts the target openly, whereas indirect aggression operates through another person or through social processes. These dimensions overlap: a verbal threat may be direct, while rumor spreading is typically indirect and relational. Measurement must specify which domain is under study because a total score can conceal meaningful differences in causes, correlates, and consequences.

Aggression can also be classified by function. Reactive aggression is an angry, defensive response to perceived provocation or threat; proactive aggression is deliberate and used to achieve an anticipated outcome (Dodge & Coie, 1987; Raine et al., 2006). The two functions are correlated, and many adolescents display both, but the distinction is clinically useful. Reactive behavior is often linked to emotional arousal, hostile interpretation, and

poor inhibitory control. Proactive behavior is more closely tied to expected rewards, instrumental learning, and beliefs that aggression will be effective. Asking what happened immediately before a behavior, what the adolescent believed, and what followed can therefore be more informative than relying only on frequency.

Adolescent aggression is influenced by a combination of psychological, interpersonal, and social factors. Research has examined the psychological correlates of aggression and highlighted the importance of understanding the individual and contextual factors associated with aggressive behaviour (Lone, 2013). Cross-cultural research among college students further demonstrated that aggression can vary across cultural and social contexts (Lone, 2016). In addition, research on adolescent mental health in Jammu and Kashmir has emphasized the importance of personal and social resources in promoting psychological well-being and protecting young people from mental-health difficulties (Lone, 2024). Together, these studies highlight the need for school-based approaches that address psychological well-being, social relationships, emotional regulation, and contextual influences when understanding and addressing adolescent aggression.

Sex and gender findings also require precision. A meta-analysis of 148 studies found a clear male-female difference in direct aggression, with boys higher on average, but the average difference in indirect aggression was trivial; direct and indirect forms were themselves strongly related (Card et al., 2008). This evidence does not support the common stereotype that girls are generally more indirectly aggressive than boys. Group averages also say little about an individual student. Gendered opportunity, reporting practices, peer norms, and adult responses can shape both behavior and its detection, so assessment should not infer aggression type from gender.

Finally, aggression should not be treated as synonymous with a diagnostic disorder. Aggressive acts may occur within normative conflict, in response to victimization, alongside anxiety or trauma-related symptoms, or as part of a broader externalizing presentation. The same observable act can serve different

functions. A useful formulation therefore attends to intensity, persistence, intent, proportionality, setting, consequences, developmental expectations, and whether the behavior is reactive, proactive, relational, or mixed.

5. Developmental and Theoretical Perspectives

Social learning theory proposes that behavior is acquired and maintained through observation, imitation, and consequences (Bandura, 1977). Adolescents are more likely to repeat aggression when influential peers or adults model it, when it produces status or escape, or when harmful behavior is inconsistently addressed. The model does not imply that exposure mechanically causes imitation; individual beliefs, self-efficacy, identification with models, and reinforcement contingencies matter. It does, however, direct attention to the classroom and family norms that make aggression appear acceptable, necessary, or effective.

Social-information-processing theory explains how moment-to-moment interpretation can create risk. Young people notice cues, interpret intent, generate responses, evaluate likely outcomes, and select an action. Biases at any stage can increase aggression. A hostile attribution bias, for example, can lead an ambiguous collision or online comment to be interpreted as deliberate disrespect, producing anger and a retaliatory response (Crick & Dodge, 1994). Reactive aggression is therefore likely when threat sensitivity and rapid appraisal outpace reflective evaluation. Interventions that slow the sequence, generate alternative explanations, and rehearse nonaggressive responses are consistent with this account.

The General Aggression Model integrates person factors, situational inputs, internal states, appraisal, and decision processes (Anderson & Bushman, 2002). Trait irritability, prior learning, beliefs, current provocation, arousal, and available scripts can jointly influence an episode. Repeated episodes may strengthen knowledge structures and expectations, creating reciprocal cycles between the person and environment. A developmental taxonomy adds a time dimension: some antisocial behavior is concentrated in

adolescence, while a smaller life-course-persistent pattern may emerge from cumulative individual and environmental risks (Moffitt, 1993). These models converge on a transactional conclusion—aggression is neither solely within the adolescent nor solely imposed by the environment.

An ecological formulation extends this reasoning across systems. Family communication, peer norms, school safety, community stress, and digital interaction can each increase or reduce risk. Protective processes may be equally distributed unevenly: a supportive caregiver, a trusted teacher, structured extracurricular involvement, and predictable school discipline can alter how stress is interpreted and managed. Research designs should therefore measure contexts rather than treating them as background variables, and interventions should avoid placing the entire burden of change on the adolescent.

6. Psychological and Contextual Correlates

6.1 Anxiety and Threat Sensitivity

Aggression is conventionally described as externalizing and anxiety as internalizing, but the two can co-occur. Anxiety may heighten vigilance to threat, increase irritability, and narrow attention under stress, which can contribute to defensive or reactive aggression. Conversely, persistent aggression can disrupt friendships, generate disciplinary problems, and expose adolescents to retaliation, potentially increasing later anxiety. A clinical review emphasized fight-or-flight processes and shared risks rather than a single causal pathway (Bubier & Drabick, 2009; Granic, 2014). This framework predicts a stronger connection between anxiety and reactive aggression than between anxiety and planned, proactive aggression.

Empirical findings support heterogeneity. A large cross-sectional study found associations between anxiety and several aggression dimensions, particularly anger and hostility, but its design could not establish direction (Chung et al., 2019). Five-wave research on direct aggression and generalized anxiety identified distinct developmental patterns rather than one uniform sequence for all adolescents (Meeus et al., 2016). Longitudinal work on indirect

aggression likewise shows that between-person differences and within-person changes can yield different conclusions, and empathy may alter some associations (Farrell & Vaillancourt, 2023). Assessment should therefore ask whether aggression occurs during fear, humiliation, overload, or anticipated rejection, while avoiding the assumption that anxiety explains every aggressive act.

6.2 Emotion Regulation and Emotional Intelligence

Emotion regulation refers to processes used to influence which emotions arise, when they arise, and how they are experienced or expressed. Difficulties identifying arousal, tolerating distress, inhibiting impulsive action, or selecting an effective strategy can increase the likelihood that anger or fear becomes behavior. A recent systematic review and meta-analysis synthesized a large literature on emotion regulation and aggression and concluded that the relationship is meaningful but depends on the strategy, aggression dimension, and study design (Smith et al., 2026). The practical implication is not that strong emotion is inherently dangerous. The relevant issue is whether an adolescent can notice, interpret, and manage emotion without harming others.

Emotional intelligence overlaps with but is not identical to emotion regulation. It includes capacities or self-perceptions related to recognizing, understanding, using, and managing emotion. A systematic review and meta-analysis of 17 adolescent studies found that higher emotional intelligence was associated with less aggressive behavior across different conceptual models of emotional intelligence (Vega et al., 2022). Most contributing evidence was observational, however, so emotional intelligence should be framed as a correlate and plausible protective resource rather than a proven single cause. Measures also differ substantially: performance-based tasks and self-report scales do not assess the same construct.

For schools, these findings support explicit teaching and rehearsal of emotional vocabulary, physiological cue recognition, cognitive reappraisal, problem solving, and help seeking. Skills should be practiced in realistic peer

conflicts and reinforced by adults; a one-off lecture is unlikely to change behavior maintained by peer rewards or inconsistent discipline. Programs should also measure actual aggressive outcomes, not only knowledge or self-reported confidence, and examine whether gains generalize across settings.

6.3 Self-Esteem

Low self-esteem is often presented as a straightforward cause of aggression, but the evidence is more complicated. Cross-sectional studies can show that self-esteem and externalizing problems are weakly related, yet such associations may reflect shared adversity, peer rejection, measurement overlap, or reverse influence. A 2026 longitudinal meta-analysis of 25 independent samples found weak negative bivariate associations over time; after baseline levels were controlled, neither self-esteem predicted later externalizing problems nor externalizing problems predicted later self-esteem (Chu et al., 2026). Externalizing outcomes were broader than aggression alone, but the result directly challenges simple causal claims.

Self-esteem remains relevant to a comprehensive formulation, particularly when perceived humiliation, unstable self-evaluation, or status threat precedes aggression. It should not, however, be assumed that generic praise or self-esteem enhancement will reduce harmful behavior. Intervention targets should be selected from an individual functional assessment and may include emotion regulation, interpretation of social cues, relationship repair, accountability, and concrete competence. Future studies should distinguish level from stability of self-esteem and test within-person mechanisms rather than inferring causality from a single correlation.

6.4 Family Relationships and Parenting

Family relationships shape modeling, emotional security, monitoring, and the consequences attached to behavior. Harsh, coercive, inconsistent, or psychologically controlling interactions may teach that force is an acceptable way to resolve conflict, whereas warmth combined with predictable limits can support regulation and accountability. These are probabilistic, not deterministic, influences.

Families facing economic strain, unsafe neighborhoods, parental distress, or limited access to services may need practical support rather than blame.

Pakistani findings are consistent with the importance of relationship quality but remain largely cross-sectional. Analysis of the 2009 Pakistan Global School-based Student Health Survey linked poorer parent-child bonding with more self-reported physical fighting, with variation by gender (Lakhtir et al., 2020). A study of 200 adolescents from three Lahore schools reported a positive association between authoritarian parenting and aggression and an inverse association for authoritative parenting (Anjum et al., 2019). Because these designs cannot establish causal direction, aggressive behavior may also strain family relationships, and unmeasured stressors may contribute to both.

Intervention evidence nevertheless supports involving caregivers when appropriate. International meta-analysis indicates that parent-training programs can reduce antisocial behavior, although effects vary by age, informant, follow-up period, and program features (Beelmann et al., 2023). Meta-analytic component research suggests value in positive reinforcement and consistent nonviolent consequences (Leijten et al., 2019). For adolescents, collaboration should respect growing autonomy and family culture; parent participation should not become surveillance or punishment that increases risk.

6.5 Peers School Climate and Digital Contexts

Peers can reinforce aggression through attention, laughter, status, group loyalty, or online amplification. Victimization can also evoke defensive aggression, creating cycles in

which perpetrator and victim roles overlap. School responses that rely only on punishment may miss these reciprocal processes and may suppress reporting. Clear norms, proportionate consequences, restorative opportunities when safe, and accessible reporting pathways are more likely to change the social contingencies surrounding aggression.

Evidence from Pakistan illustrates the importance of context. In a nationally representative 2009 school survey, Shaikh et al. (2019) found that involvement in physical fighting was associated with factors including bullying victimization. A separate convenience sample of 400 school- and college-going adolescents in Rawalpindi found that peer victimization was negatively related to school connectedness and mental well-being (Arif et al., 2019). The latter study did not measure aggression as its principal outcome, but it supports the relevance of belonging and safety to adolescent adjustment. Because the national data are now historical and the local study was geographically limited, neither should be treated as a current national prevalence estimate.

Digital communication changes the speed, audience, permanence, and visibility of peer conflict. Online aggression may be direct or indirect, and it can continue beyond school hours. At the same time, digital exposure should not be used as a universal explanation for youth aggression. Assessment should examine specific behaviors, platform affordances, peer norms, and offline-online spillover. Schools also need procedures that protect evidence, privacy, and student safety without overreaching into ordinary disagreement.

7. Evidence Summary

Table 1 Selected Evidence and Implications for Adolescent Aggression

Domain	Evidence synthesis	Implication
Aggression type	Physical, verbal, relational, direct, and indirect forms overlap but are not interchangeable; reactive and proactive functions can coexist.	Define the target behavior and its function before interpreting a total score or selecting an intervention.
Sex and gender	Boys average higher direct	Avoid gender stereotypes and

Domain	Evidence synthesis	Implication
	aggression; the average sex difference in indirect aggression is trivial (Card et al., 2008).	assess each adolescent's actual pattern and context.
Anxiety	Co-occurrence is heterogeneous; threat sensitivity is most plausibly linked to defensive or reactive aggression.	Assess fear, perceived threat, victimization, and temporal order; do not infer causality from correlation.
Emotion processes	Emotion-regulation difficulties and lower emotional intelligence are associated with aggression (Smith et al., 2026; Vega et al., 2022).	Teach and rehearse regulation skills, but also change peer and adult contingencies that reward aggression.
Self-esteem	Recent longitudinal synthesis did not find robust cross-lagged effects after baseline adjustment (Chu et al., 2026).	Do not rely on generic self-esteem enhancement as a stand-alone aggression intervention.
Family and school	Parent-child relationships, peer victimization, and school connectedness are relevant correlates in Pakistani studies.	Use nonblaming family engagement, consistent school norms, safe reporting, and multi-informant assessment.
Intervention	School-based and psychosocial programs show average short-term benefits, but effects vary and adolescent long-term evidence is limited.	Match components to function, monitor fidelity and safety, and evaluate outcomes beyond questionnaire scores.

Note. The table summarizes selected evidence from the narrative review and is not a quantitative ranking of causal importance.

8. Assessment and Measurement

Assessment should begin with an operational definition and a safety screen. Practitioners and researchers should document the form, frequency, severity, duration, target, setting, precipitating events, perceived intent, consequences, and degree of impairment. Immediate risk of serious harm requires local safeguarding and emergency procedures; a questionnaire score is not a substitute for risk assessment. It is also important to assess victimization, trauma exposure, anxiety, mood, substance use, sleep, learning needs, family stress, and disciplinary context because these can change both interpretation and intervention planning.

The Buss-Perry Aggression Questionnaire assesses physical aggression, verbal aggression,

anger, and hostility (Buss & Perry, 1992). It is widely used, but anger and hostility are affective and cognitive correlates rather than aggressive acts themselves. The Reactive-Proactive Aggression Questionnaire distinguishes 11 reactive and 12 proactive items and is useful when function is central (Raine et al., 2006). Neither instrument provides a psychiatric diagnosis. When instruments are translated into Urdu or another language, simple word-for-word translation is insufficient; forward and back translation, cognitive interviewing, pilot testing, measurement invariance, reliability, and construct validity should be evaluated in the intended age and cultural group.

A multi-informant strategy is preferable. Adolescents may know about covert or online behavior that adults do not see; teachers can

compare behavior across classroom demands; caregivers can describe home patterns; peer reports can capture network processes. Informants may disagree because behavior is situation-specific or because each has different access and thresholds (Achenbach et al., 1987). Researchers should report each source clearly rather than automatically averaging them. School records can add information but reflect disciplinary practices and potential bias as well as student behavior.

For research, total aggression scores should not automatically be treated as normally distributed or interchangeable across sex, age, language, school type, and region. Confirmatory factor analysis, invariance testing, internal-consistency estimates, and transparent scoring rules are important. Prospective studies should measure baseline aggression and use temporally separated assessments to examine directionality. When moderation is hypothesized—for example, self-esteem altering the association between anxiety and aggression—power analysis, centered predictors, interaction terms, and simple-slope interpretation should be prespecified rather than explored after results are known.

9. Prevention and Intervention

Intervention should match the function and ecology of aggression. For reactive aggression, useful components may include arousal recognition, paced responding, cognitive reappraisal, exposure to nonthreatening interpretations, problem solving, and repair after conflict. For proactive aggression, practitioners may need to change reinforcement contingencies, challenge beliefs about the benefits of harm, strengthen prosocial routes to status, and apply consistent consequences. Relational aggression requires attention to peer networks and bystander behavior, not only individual anger management.

School-based programs have an empirical foundation, but effects are not uniform. A meta-analysis of 17 studies reported a small-to-moderate average reduction in aggression and found stronger effects for theoretically grounded, randomized programs and sessions shorter than 45 minutes (Shen et al., 2025). Earlier meta-analysis of universal social and

emotional learning programs found improvements across social-emotional skills, behavior, and academic outcomes when programs were implemented effectively (Durlak et al., 2011). These findings support structured, sequenced, active, and focused skill practice, accompanied by implementation monitoring. They do not establish that every branded program will work in every Pakistani school.

Cognitive-behavioral approaches for anger have shown beneficial average effects in children and adolescents, with skill development, affective education, and problem solving among common components (Sukhodolsky et al., 2004). More recent synthesis of randomized trials for disruptive behavior found short-term benefits for parent-only and multicomponent psychosocial interventions in younger age groups, but adolescent-specific and longer-term evidence was limited (Selph et al., 2026). Consequently, schools and clinicians should monitor individual progress and adverse effects rather than assume that evidence from younger children generalizes fully to older adolescents.

A tiered school framework is practical. Universal prevention can establish respectful norms, teach emotion and conflict skills, and provide confidential reporting. Selected support can be offered to students with emerging risk or victimization. Indicated intervention can integrate individualized formulation, caregiver work, teacher consultation, and referral to qualified mental-health services. Progress indicators might include verified incidents, severity, attendance, classroom participation, relationship repair, and student-reported safety. Reducing a questionnaire score without improving safety or functioning is not sufficient.

Cultural adaptation should preserve the intervention's active ingredients while changing examples, language, delivery, and family engagement to fit the setting. In Pakistan, adaptations should be developed with adolescents, caregivers, teachers, school leaders, and local clinicians. Gender norms, respect for elders, family privacy, religious and community resources, and variations between urban and rural schools may affect acceptability. Cultural sensitivity must not be used to excuse violence, silence victims, or avoid safeguarding responsibilities.

10. Discussion

The evidence supports four broad conclusions. First, adolescent aggression is multidimensional. Form and function should be specified before causes or treatments are proposed. Second, psychological correlates such as anxiety, emotion regulation, emotional intelligence, and self-esteem are embedded within relationships and institutions. Third, associations are often reciprocal or confounded; cross-sectional correlations cannot establish whether a factor causes aggression. Fourth, prevention is most credible when it combines individual skills with changes to reinforcement, adult responses, peer norms, and school safety.

These conclusions refine several claims found in broad narrative discussions of aggression. Boys show more direct aggression on average, but evidence does not justify assuming that girls are more indirectly aggressive. Anxiety may accompany aggression, but there is no single developmental sequence. Lower emotional intelligence and emotion-regulation difficulties are plausible intervention targets, yet much of the evidence is observational. Low self-esteem should not be treated as a demonstrated cause, especially in light of recent longitudinal meta-analysis (Chu et al., 2026). Precision in these claims improves both scientific credibility and ethical practice.

For Pakistani research, the most urgent gap is not another small cross-sectional convenience sample using imported measures without validation. National evidence frequently cited today comes from data collected in 2009 (Lakhtar et al., 2020; Shaikh et al., 2019), while useful local studies are limited in geography and design (Anjum et al., 2019; Arif et al., 2019). Updated representative surveys should distinguish physical fighting, bullying, relational aggression, and reactive-proactive functions; include out-of-school adolescents where feasible; and examine urban, rural, provincial, socioeconomic, and school-sector variation.

A strong prospective study could follow secondary-school students across multiple waves, combine adolescent, teacher, and caregiver reports, and test whether anxiety predicts later reactive aggression after baseline aggression is controlled. Emotion regulation or

emotional intelligence could be examined as mechanisms, while self-esteem could be tested as a moderator rather than presumed to be causal. Such a design would require preregistered hypotheses, culturally validated measures, transparent missing-data procedures, adequate power for interaction effects, school-cluster adjustment, and a safeguarding protocol.

Publication quality also depends on reporting discipline. Authors should identify whether a paper is a narrative review, systematic review, protocol, or empirical study; describe exactly how evidence was located; avoid recycling text from prior manuscripts; ensure that every in-text citation appears in the reference list; and verify each DOI against the publisher record. Co-authorship should reflect genuine scholarly contributions and written agreement. The final manuscript should be adapted to one journal's instructions before submission, and all authors should review the text, source accuracy, similarity report, and any journal policy on disclosure of generative artificial intelligence.

11. Limitations

This review has limitations. It was a structured narrative synthesis rather than a preregistered systematic review, so relevant studies may have been missed and selection judgments were not independently duplicated. The evidence spans different definitions, age ranges, informants, settings, and outcomes, limiting direct comparison. Several intervention reviews include younger children or broad disruptive behavior rather than aggression-specific adolescent outcomes. Pakistani studies are few, largely cross-sectional, and often based on historical national data or geographically restricted convenience samples. The review therefore prioritizes conceptual clarity and cautious interpretation over claims of exhaustiveness or causal certainty.

12. Future Perspectives

Future research on adolescent aggression should move beyond small, cross-sectional school samples toward longitudinal, multi-site studies that can distinguish developmental persistence from transient or context-specific aggressive behavior. In Pakistan, prospective research should include adolescents from

different provinces, urban and rural settings, school sectors, and socioeconomic backgrounds, while also considering adolescents who are not enrolled in school. Such designs would allow researchers to examine how aggression changes over time and whether psychological factors, family relationships, peer experiences, and school environments predict distinct developmental trajectories. Socioeconomic and nutritional characteristics should also be considered as part of broader contextual assessment rather than treated as peripheral variables, particularly because recent Pakistani research has demonstrated substantial variation in nutritional status and socioeconomic conditions among young people. Future studies should therefore collect sufficiently detailed demographic, socioeconomic, educational, and family-level information to identify potentially modifiable contextual influences (Riaz et al., 2026).

A second priority is the development of culturally appropriate, multidimensional assessment systems. Future Pakistani studies should validate Urdu measures separately for physical, verbal, relational, reactive, and proactive aggression and should establish measurement invariance across sex, age, school type, and geographical region. Multi-informant assessment should combine adolescent self-report with teacher, caregiver, and, where feasible, peer information. Longitudinal measurement should additionally permit examination of temporal ordering among aggression, anxiety, emotional regulation, and other psychological variables. Biological and developmental variables may also be incorporated cautiously into these models. For example, research involving adolescent athletes has examined nutritional supplementation in relation to IGF-1 expression, illustrating the potential value of integrating developmental and biological indicators into adolescent research rather than relying exclusively on psychological questionnaires (Butt et al., 2026). Such biological measures should be treated as exploratory correlates or mechanisms until replicated in aggression-specific longitudinal research.

Future intervention research should place greater emphasis on implementation,

feasibility, and sustainability within Pakistani schools. Rather than testing only whether an intervention reduces questionnaire scores, studies should evaluate attendance, disciplinary incidents, classroom functioning, perceived safety, peer relationships, family engagement, and maintenance of effects after the intervention ends. Intervention development should also account for differences in educational environments and access to resources. Research on AI-assisted learning and educational technologies suggests that digital tools are increasingly being investigated for personalized learning and academic support; similar technologies could eventually be evaluated as adjuncts for emotion-regulation training, conflict-management practice, screening support, or individualized psychoeducation, provided that privacy, informed consent, cultural appropriateness, and safeguarding are addressed (Faizi et al., 2026; Kamal et al., 2026). Such applications should be evaluated through controlled studies rather than assuming that technological delivery itself produces behavioral improvement.

Another important direction is the integration of social determinants into aggression research. Adolescents experiencing displacement, socioeconomic disadvantage, educational disruption, or limited access to health services may encounter interacting risks that cannot be adequately represented by individual psychological variables alone. Future Pakistani research should therefore examine how socioeconomic conditions, access to healthcare, family resources, educational opportunities, and social exclusion interact with psychological processes associated with aggression. Comparative research on migration, displacement, and healthcare inequities provides a broader framework for considering how structural circumstances can influence access to support and health-related outcomes (Riaz et al., 2026). This perspective is particularly relevant when designing prevention programs for adolescents from underserved or socially marginalized communities.

Finally, future research should increasingly use integrated developmental models rather than testing isolated predictors. Aggression may emerge from interactions among emotional

processes, perceived threat, peer reinforcement, family relationships, school climate, socioeconomic circumstances, and individual developmental characteristics. Advanced longitudinal designs could therefore test mediation, moderation, reciprocal effects, and person-centered developmental trajectories while controlling for baseline aggression. Researchers should preregister hypotheses, use adequately powered samples for interaction analyses, report missing-data procedures transparently, and distinguish exploratory from confirmatory findings. Future studies should also examine whether school-based interventions can be adapted across Pakistani cultural and educational contexts without losing their active components. This approach would help establish an evidence base that is not only statistically informative but also feasible for real-world schools and responsive to the diversity of Pakistani adolescents.

13. Conclusion

Adolescent aggression is best understood as a heterogeneous behavior that develops through transactions among emotion, cognition, learning, relationships, and social context. Anxiety and threat sensitivity may be especially relevant to reactive aggression; emotion-regulation difficulties and lower emotional intelligence are associated with aggression; and current longitudinal evidence cautions against treating low self-esteem as a simple cause. Assessment should differentiate forms and functions, use multiple informants, examine context, and separate screening from diagnosis and safety evaluation. School-based, cognitive-behavioral, parent-involved, and multicomponent approaches are promising when implemented with fidelity and monitored, but adolescent-specific long-term evidence remains incomplete. Pakistan needs updated representative research, culturally validated measures, prospective designs, and intervention trials that examine both effectiveness and feasibility. Scientific precision, developmental sensitivity, and coordinated support across adolescents, families, schools, and qualified services offer the strongest foundation for reducing harm.

Declarations

Ethical considerations. This narrative review analyzed previously published literature and did not recruit participants or collect new human data; institutional ethics approval was therefore not required for this manuscript.

Data availability. No new dataset was generated or analyzed for this narrative review.

REFERENCES

- Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin*, 101(2), 213–232. <https://doi.org/10.1037/0033-2909.101.2.213>
- Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology*, 53, 27–51. <https://doi.org/10.1146/annurev.psych.53.100901.135231>
- Anjum, A., Noor, T., & Sharif, N. (2019). Relationship between parenting styles and aggression in Pakistani adolescents. *Khyber Medical University Journal*, 11(2), 98–101. <https://doi.org/10.35845/kmu.j.2019.18568>
- Arif, S., Khan, S., Rauf, N. K., & Sadia, R. (2019). Peer victimization, school connectedness, and mental well-being among adolescents. *Pakistan Journal of Psychological Research*, 34(4), 835–851. <https://doi.org/10.33824/PJPR.2019.34.4.45>
- Bandura, A. (1977). *Social learning theory*. Prentice Hall.
- Beelmann, A., Arnold, L. S., & Hercher, J. (2023). Parent training programs for preventing and treating antisocial behavior in children and adolescents: A comprehensive meta-analysis of international studies. *Aggression and Violent Behavior*, 68, 101798. <https://doi.org/10.1016/j.avb.2022.101798>

- Bubier, J. L., & Drabick, D. A. G. (2009). Co-occurring anxiety and disruptive behavior disorders: The roles of anxious symptoms, reactive aggression, and shared risk processes. *Clinical Psychology Review*, 29(8), 658–669. <https://doi.org/10.1016/j.cpr.2009.08.005>
- Buss, A. H., & Perry, M. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology*, 63(3), 452–459. <https://doi.org/10.1037/0022-3514.63.3.452>
- Butt, Muhammad Abdullah, Muhammad Asif Ali, Anam Ishaq, Ambreen Saleem, Sawera Hayat, and Nida Khalil. "The Influence Of Dietary Zinc Supplementation On The Expression Of Insulin-Like Growth Factor 1 (Igf-1) In Adolescent Athletes: <https://doi.org/10.5281/zenodo.19438363>." *Pakistan Journal of Medical & Cardiological Review* 5, no. 2 (2026): 12-19. <https://pakjmcr.com/index.php/1/article/view/796>
- Card, N. A., Stucky, B. D., Sawalani, G. M., & Little, T. D. (2008). Direct and indirect aggression during childhood and adolescence: A meta-analytic review of gender differences, intercorrelations, and relations to maladjustment. *Child Development*, 79(5), 1185–1229. <https://doi.org/10.1111/j.1467-8624.2008.01184.x>
- Chu, X., Liao, T., Sun, H., & Chen, H. (2026). No robust evidence for cross-lagged effects between self-esteem and externalizing problems: A longitudinal meta-analysis. *Journal of Youth and Adolescence*, 55(9), 2241–2258. <https://doi.org/10.1007/s10964-026-02394-x>
- Chung, J. E., Song, G., Kim, K., Yee, J., Kim, J. H., Lee, K. E., & Gwak, H. S. (2019). Association between anxiety and aggression in adolescents: A cross-sectional study. *BMC Pediatrics*, 19, 115. <https://doi.org/10.1186/s12887-019-1479-6>
- Cleverley, K., Szatmari, P., Vaillancourt, T., Boyle, M., & Lipman, E. (2012). Developmental trajectories of physical and indirect aggression from late childhood to adolescence: Sex differences and outcomes in emerging adulthood. *Journal of the American Academy of Child & Adolescent Psychiatry*, 51(10), 1037–1051. <https://doi.org/10.1016/j.jaac.2012.07.010>
- Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin*, 115(1), 74–101. <https://doi.org/10.1037/0033-2909.115.1.74>
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development*, 66(3), 710–722. <https://doi.org/10.2307/1131945>
- Dodge, K. A., & Coie, J. D. (1987). Social-information-processing factors in reactive and proactive aggression in children's peer groups. *Journal of Personality and Social Psychology*, 53(6), 1146–1158. <https://doi.org/10.1037/0022-3514.53.6.1146>
- Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development*, 82(1), 405–432. <https://doi.org/10.1111/j.1467-8624.2010.01564.x>
- Faizi, Waqar Un Nisa, Saira Akhtar, and Muhammad Abdullah Butt. "The Impact of Artificial Intelligence-Assisted Learning on Academic Performance and Critical Thinking Skills Among Undergraduate Students." *Social Science Review Archives* 4, no. 2 (2026): 2925-2948. <https://doi.org/10.70670/sra.v4i2.2401>

- Farrell, A. H., & Vaillancourt, T. (2023). Indirect aggression, anxiety, and empathy: Disaggregating between- and within-person longitudinal associations during childhood and adolescence. *Development and Psychopathology*, 35(1), 228–240. <https://doi.org/10.1017/S0954579421001450>
- Granic, I. (2014). The role of anxiety in the development, maintenance, and treatment of childhood aggression. *Development and Psychopathology*, 26(4, Part 2), 1515–1530. <https://doi.org/10.1017/S0954579414001175>
- Kamal, Numra, Muhammad Abdullah Butt, and Umer Javeid. "An empirical study on the effectiveness of artificial intelligence tools in English language acquisition and teaching strategies within an ESG framework." *Social Science Review Archives* 4, no. 1 (2026): 3562-3568. <https://doi.org/10.70670/sra.v4i1.1922>
- Lakhtdir, M. P. A., Rozi, S., Peerwani, G., & Nathwan, A. A. (2020). Effect of parent-child relationship on physical aggression among adolescents: Global School-based Student Health Survey. *Health Psychology Open*, 7(2). <https://doi.org/10.1177/2055102920954715>
- Leijten, P., Gardner, F., Melendez-Torres, G. J., van Aar, J., Hutchings, J., Schulz, S., Knerr, W., & Overbeek, G. (2019). Meta-analyses: Key parenting program components for disruptive child behavior. *Journal of the American Academy of Child & Adolescent Psychiatry*, 58(2), 180–190. <https://doi.org/10.1016/j.jaac.2018.07.900>
- Lone, B. A. (2013). Psychological correlates of aggression. *European Academic Research*, 1(8), 2123–2130.
- Lone, B. A. (2016). A cross-cultural study on aggression in a group of college students from West Bengal and Jammu & Kashmir. *International Journal of Indian Psychology*, 3(3). <https://doi.org/10.25215/0303.002>
- Meeus, W. H. J., van de Schoot, R., Hawk, S. T., Hale, W. W., III, & Branje, S. (2016). Direct aggression and generalized anxiety in adolescence: Heterogeneity in development and intra-individual change. *Journal of Youth and Adolescence*, 45(2), 361–375. <https://doi.org/10.1007/s10964-015-0388-8>
- Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review*, 100(4), 674–701. <https://doi.org/10.1037/0033-295X.100.4.674>
- Raine, A., Dodge, K., Loeber, R., Gatzke-Kopp, L., Lynam, D., Reynolds, C., Stouthamer-Loeber, M., & Liu, J. (2006). The Reactive-Proactive Aggression Questionnaire: Differential correlates of reactive and proactive aggression in adolescent boys. *Aggressive Behavior*, 32(2), 159–171. <https://doi.org/10.1002/ab.20115>
- Riaz, Muhammad, Muhammad Abdullah Butt, Qaisar Sohail, Talha Riaz, and Ambreen Saleem. "Dietary Habits, Nutritional Status, and Socioeconomic Factors Among University Students in Punjab, Pakistan: A Multicity Nutritional and Social Survey." *Social Science Review Archives* 4, no. 2 (2026): 2723-2742. <https://doi.org/10.70670/sra.v4i2.2370>
- Riaz, Muhammad, Neelam Tariq, Madiha Iqbal, Muhammad Abdullah Butt, Qaisar Sohail, and Talha Riaz. "Migration, Displacement, and Health Inequities: A Comparative Study of Refugee Populations and Access to Healthcare Services." *Social Science Review Archives* 4, no. 2 (2026): 2704-2722. <https://doi.org/10.70670/sra.v4i2.2369>

- Selph, S. S., Brodt, E., Dana, T., Skelly, A. C., Atchison, C., Fu, R., Yu, Y., Riopelle, D., Stabler Morris, S., Schmidt, L., Ahmed, A., Williams, L., & Freeman, K. A. (2026). Psychosocial interventions for disruptive behavior in children and adolescents: A meta-analysis. *Pediatrics*, 157(2), e2025072476. <https://doi.org/10.1542/peds.2025-072476>
- Shaikh, M. A., Abio, A., Celedonia, K. L., & Lowery Wilson, M. (2019). Physical fighting among school-attending adolescents in Pakistan: Associated factors and contextual influences. *International Journal of Environmental Research and Public Health*, 16(24), 5039. <https://doi.org/10.3390/ijerph16245039>
- Shen, L., Jiang, S., & Tan, S. (2025). The effectiveness of school-based programs on aggressive behaviors among children and adolescents: A systematic review and meta-analysis. *Research on Social Work Practice*, 35(2), 149–169. <https://doi.org/10.1177/10497315241227147>
- Smith, K., Jones, A., Daly, N., Widdrington, H., Garofalo, C., & Gillespie, S. M. (2026). Emotion regulation and aggression: A systematic review and meta-analysis. *Aggressive Behavior*, 52(1), e70055. <https://doi.org/10.1002/ab.70055>
- Sukhodolsky, D. G., Kassinove, H., & Gorman, B. S. (2004). Cognitive-behavioral therapy for anger in children and adolescents: A meta-analysis. *Aggression and Violent Behavior*, 9(3), 247–269. [https://doi.org/10.1016/S1359-1789\(03\)00072-7](https://doi.org/10.1016/S1359-1789(03)00072-7)
- Vega, A., Cabello, R., Megías-Robles, A., Gómez-Leal, R., & Fernández-Berrocal, P. (2022). Emotional intelligence and aggressive behaviors in adolescents: A systematic review and meta-analysis. *Trauma, Violence, & Abuse*, 23(4), 1173–1183. <https://doi.org/10.1177/1524838021991296>
- Wani, S., & Lone, B. A. (2024). *Promoting mental health among adolescents in Jammu and Kashmir: The role of personal and social resources*. *Journal of Informatics Education and Research*.