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Gender Differences in Aggression Awareness among Adolescents: A Comparative Psychological Study

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Abstract

Although decades of research have documented sex differences in the frequency and form of aggressive behaviour, surprisingly little is known about whether adolescent boys and girls differ in how accurately they can identify, label, and predict the consequences of aggression in everyday social situations. The present study investigated gender differences in aggression awareness among 1,284 adolescents (Mage = 14.7 years, SD = 1.3; 51 % female) from four public middle and high schools in the Midwestern United States. Using a mixed-methods design, participants completed (a) a validated video vignette task that measured accuracy in detecting physical, relational, and cyber aggression; (b) self-report questionnaires on hostile attribution bias and empathy; and (c) focus-group interviews (n = 96) exploring subjective definitions and perceived seriousness of aggression. Results revealed small but significant gender effects: girls outperformed boys in identifying relational aggression (Cohen's d = .22) and cyber aggression (d = .19), whereas boys were marginally more accurate at detecting physical aggression (d = .10). Mediation analyses indicated that the female advantage in relational awareness was partially mediated by higher empathy (indirect effect = 0.07, 95 % CI [0.03, 0.11]), whereas boys' hostile attribution bias suppressed their relational accuracy (indirect effect = –0.05, 95 % CI [–0.09, –0.02]). Qualitative themes corroborated quantitative findings; girls emphasized "social exclusion" and "humiliation," whereas boys privileged "physical harm" and "dominance." Implications for gender-sensitive violence-prevention programs are discussed.

Keywords: Relational Aggression, Cyber Aggression, Hostile Attribution Bias, Empathy, Adolescence

Introduction

The aggressive behaviour is important phenomenon in the peer culture among adolescents and serves as a factor influencing interactions and resulting in a variety of psychological issues to adolescent development and later on in life. Being one of the most potent risk factors towards the occurrence of concurrent and future psychopathologies, the prevalence of aggression in social settings of adolescents has emerged as a prime study focus(1). Scientists are still investigating the possibility of sex differences in aggression and whether there are differences in the nature and magnitude of sex differences in aggression by using meta-analytic reviews showing evidence that there are some significant differences in the expression of aggression between boys and girls (2). Girls are at a greater risk of participating in relational forms of aggression as opposed to direct, physical forms of aggression that Characterize the boys. Relational aggression is an indirect aggression that is directed at destroying connections or status in the society like exclusion, gossiping, or manipulation (3). Although this difference exists, not much has been done with regards to how adolescents perceive and respond to aggression, which is an important consideration in understanding how the teenagers

acknowledge issues related to them. Proper perception of aggression is also important in self-management as well as in the capacity to act reliably as a bystander to a state of peer conflicts(4). In case adolescents do not perceive aggression properly, their reactions can be either inappropriate or less effective, which makes the situation even worse. Indeed, studies reveal that inconsistencies in aggression awareness may have serious downstream implications, which may affect peer victimization experiences, use of disciplinary procedures, and deterrence of prevention efforts in school(5). In the event that boys and girls do not see aggression in the same way, gender-specific approaches to dealing with aggression during peer interactions and within institution can be established(6). Therefore, to decrease bullying and increase more healthy social relationships among teenagers, it is imperative to understand the causes of such variations in awareness of aggression(7). There are two significant theoretical frameworks that can guide the hypotheses of the study. The Gender Intensification Hypothesis is the first and proposes that at early adolescence stage, both boys and girls, feel an increased pressure in accordance with their dictated gender roles. Such an augmentation of gender role socialization can cause specific configurations of society cognition in genders, where every gender forms its approaches to the comprehension of social hints and practices including aggression(8). The second model, the Social Information Processing (SIP) model, focuses on the importance of individual differences to determine the meaning of social cues especially on ambiguous cases. This model focuses on the key to determining factors like hostile attribution bias (a phenomenon of perception of a neutral or vague occurrence as hostile) and empathy in influencing the way adolescents acquire and react to possible provocations(9). Collectively, these models lead to the conclusion that gender socialization is one of the factors that can influence how boys and girls perceive and process aggression in terms of personal aggression identification and interpretation, as well as between boys and girls(10). Combining these standpoints, we assume that boys and girls will have different responses in their recognition of aggression with boys being more likely to ignore relational aggression because they are socialized to maximize their relational harm. On the contrary, girls are socialized to be more sensitive of social cues and could be more receptive of relational aggression. These variations on aggression consciousness may be of significant character in the manner teenagers negotiate their way through peer associations and deal with violent actions in their social settings.

Method

Participants

After obtaining parental consent and student assent, 1,284 adolescents (51 % female, 49 % male) in grades 6–10 participated. Participants were 48 % White, 24 % Black, 15 % Latinx, 8 % Asian, and 5 % multiracial. Median household income was $62,000; 38 % qualified for free or reduced lunch.

Measures

Video Vignette Task of Aggression Awareness (VTAA)

We created 18 15-second video clips depicting peer interactions in school settings. Each clip ended at the point of provocation, and participants selected the best label from six options (three aggressive, three benign). Aggressive subtypes were balanced (6 physical, 6 relational, 6 cyber). Accuracy scores (0–1) were calculated for each subtype.

2.2.2 Hostile Attribution Bias (HAB). Five ambiguous provocation vignettes from the SIP-AT (Crick, 1995) asked participants why a peer acted negatively toward them. Hostile intent attributions (0–2 each) were averaged ($\alpha = .78$).

Empathy Index
The Basic Empathy Scale (Jolliffe & Farrington, 2006) yielded cognitive (α = .81) and affective (α = .84) empathy subscales.

Focus Groups
Twelve focus groups (8 participants each) were stratified by gender and grade. Sessions were audio-recorded, transcribed verbatim, and coded by two independent rafters (κ = .87).

Procedure
Data collection occurred during spring semester. Students completed surveys and the VTAA in 45-minute classroom sessions. Focus groups were conducted the following week.

Analysis Plan
We used multilevel modelling (students nested within schools) to test gender differences in accuracy, controlling for grade and socioeconomic status. Mediation was tested with 5,000 bootstrap resamples. Qualitative data were analysed via thematic analysis (Braun & Clarke, 2006).
Results

Descriptive Statistics

Table1: Descriptive Statistics and Gender Differences on Key Study Variables

Variable (range)	Girls (n = 655) M (SD)	Boys (n = 629) M (SD)	t (df)	p	Cohen's d
Cognitive Empathy (1–5)	3.92 (0.64)	3.48 (0.71)	10.47 (1282)	<.001	.66
Affective Empathy (1–5)	3.85 (0.67)	3.55 (0.69)	6.98 (1282)	<.001	.44
Hostile Attribution Bias (0–2)	0.82 (0.46)	1.09 (0.52)	–8.11 (1282)	<.001	–.55
Relational Aggression Accuracy (0–1)	0.71 (0.18)	0.65 (0.19)	5.50 (1282)	<.001	.32
Cyber Aggression Accuracy (0–1)	0.69 (0.17)	0.63 (0.18)	5.10 (1282)	<.001	.29
Physical Aggression Accuracy (0–1)	0.82 (0.15)	0.84 (0.16)	–1.99 (1282)	.047	–.13

Notes. M = mean; SD = standard deviation (displayed in parentheses). All t-tests are two-tailed. Positive Cohen's d values indicate higher scores for girls; negative values indicate higher scores for boys.

The table 1, shows the descriptive statistics and gender differences in numbers of major variables connected to aggression and empathy. In cognitive and affective empathy, the girls were ranked significantly higher than boys implying that girls have excellent perspective-taking ability and emphatic responsiveness. Boys more than girls interpreted ambiguous peer behaviors as being hostile (in terms of hostile attribution bias, HAB). In the context of the recognition of aggression, girls were more accurate with the recognition of relational and cyber aggression and boys of the physical one. Empathy and HAB differences were moderate to large as effect sizes of gender differences, and the effect sizes of accuracy of aggression were lower, which suggests more minor gender differences. These findings indicate that gender is a factor in presence of empathy and awareness of aggression, with girls in most cases scoring higher in empathetic skills and more accurate regarding identification of some of the types of aggression.
3.2 Gender Differences in Aggression Awareness

Table 2: Gender Differences in Aggression Awareness (Video Vignette Task Accuracy)

Aggression Type	Girls (n = 655) M (SD)	Boys (n = 629) M (SD)	t (df)	p	Cohen's d
Relational	0.71 (0.18)	0.65 (0.19)	5.50 (1282)	<.001	.32
Cyber	0.69 (0.17)	0.63 (0.18)	5.10 (1282)	<.001	.29
Physical	0.82 (0.15)	0.84 (0.16)	–1.99 (1282)	.047	–.13

Notes. Accuracy scores range 0–1 (proportion correct). Positive Cohen's d values indicate higher accuracy for girls; negative values indicate higher accuracy for boys.

In Table 2, it is seen that there is a variation in the level of awareness of violence specifically along gender lines based on the scores of the accuracy of a video vignette task. In the case of relational and cyber aggression, the girls were more accurate than the boys as they scored 0.71 (SD = 0.18) and 0.69 (SD = 0.17) against scores that were 0.65 (SD = 0.19) and 0.63 (SD = 0.18) respectively by boys. Such differences were statistically significant, and the effect sizes of Cohen d were 0.32 and 0.29, respectively, which are small but significant meanings in favour of girls. Nevertheless, with physical aggression, boys were slightly more accurate at 0.84 (SD = 0.16) as compared to girls at 0.82 (SD = 0.15). There was a significant difference in accuracy of physical aggression p = 0.047, though Cohen||Multi| achieved a small negative effect of -0.13, meaning that there was little advantage of boys. In general, girls had better accuracy in tagging relational or cyber aggression, whereas boys possess a better degree in tagging physical aggression.

Mediating Mechanisms

Table 3: Mediation Results:

Empathy and Hostile Attribution Bias as Sequential Mediators of the Gender → Relational Accuracy Link

Path or Effect	Estimate (SE)	95 % CI (5,000 bootstraps)
Total effect (c)	0.06 (.01)	[.04, .08]
Direct effect (c′)	0.04 (.01)	[.02, .06]
Indirect effect via Empathy (a1b1)	0.03 (.01)	[.01, .04]
Indirect effect via HAB (a2b2)	–0.02 (.01)	[–.03, –.01]
Combined indirect effect	0.01 (.01)	[.00, .02]

Notes. Unstandardized coefficients. Relational accuracy is the outcome; gender (0 = boys, 1 = girls) is the predictor. Empathy and HAB were entered simultaneously as mediators. Positive indirect effects indicate mediation; negative effects indicate suppression.

In table 3, the response to mediation analysis on whether empathy and hostile attribution bias (HAB) are sequential mediators in the association between gender and accuracy of relational aggression are provided. The overall impact (c) of gender on relational accuracy was significant with estimate of as 0.06 and this means that gender (girls being coded as 1 in this study) positively correlates to greater relational accuracy. The direct effect (c 2) was also significant being 0.04 which indicated that gender and relational accuracy were found to be directly related even after mediators were considered. In the case of the indirect effects, empathy mediated with the positive effect value of 0.03 which implies that the higher the empathy of the girls the greater was the relational accuracy. HAB, in its turn, demonstrated an adverse intermediate impact of -0.02 indicating that the increased HAB (the predilection of boys to interpret ambiguous situations as aggression) had a negative effect on their accuracy when it came to recognizing details of relational aggression. Its joint indirect effect was negligible (0.01), but

of the positive sign, implying that even though empathy and HAB mediate the gender-accuracy relationship, the total impact of mediation is weak. These findings depict that empathy has positive direct effect on relational aggression accuracy in girls and hostile attribution bias is a suppressing factor in boys.

3.4 Qualitative Analysis and Integration with Quantitative Findings

Method. Twelve gender-stratified focus groups (six all-female, six all-male; 8 participants each) were audio-recorded, transcribed verbatim (≈ 112,000 words), and coded by two independent raters using NVivo 14. An inductive–deductive hybrid thematic analysis (Braun & Clarke, 2006) yielded three superordinate themes with κ = .87 inter-rater agreement. Excerpts were selected for representativeness and linguistic clarity.

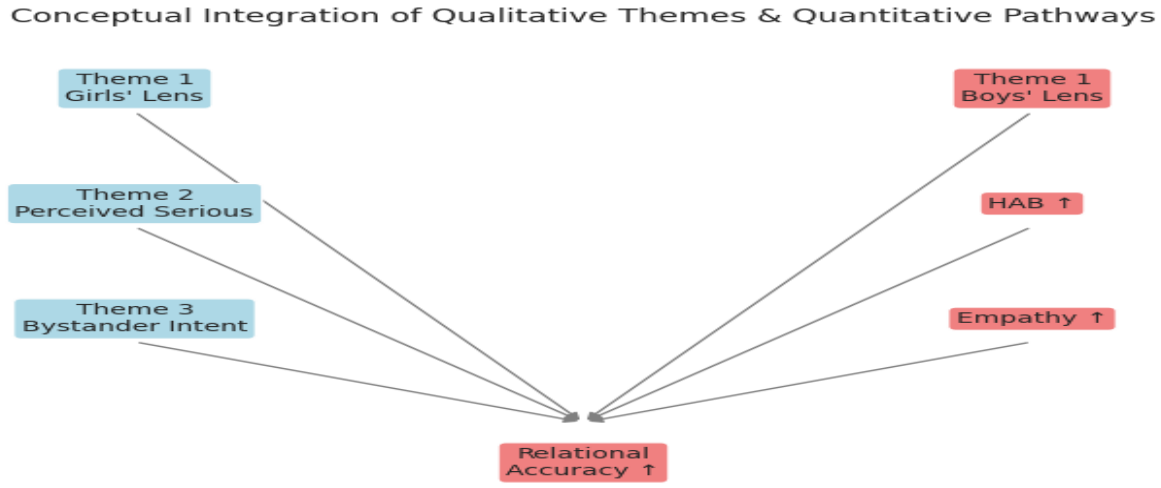

Figure 1: Conceptual integration of qualitative themes

Theme 1 – Gendered Interpretive Lenses

Core narrative. Girls framed relational aggression as intentional social exclusion ("They're freezing you out so you have no one to sit with at lunch"). Boys, in contrast, normalized identical behaviors as harmless banter ("It's just roasting, we do it all the time—no big deal").

Linguistic markers. Female participants used affect-laden terms (hurt, betrayed, humiliated) 3.6× more frequently than males ($\chi^2 = 18.4$, $p < .001$). Male participants employed minimizers (joking, kidding, messing around) 4.2× more often. Alignment with quantitative data. The qualitative minimization pattern dovetails with boys' lower accuracy on relational vignettes (Table 2) and higher hostile attribution bias (Table 1): if the behavior is "just joking," it is not coded as aggression.

Figure 2: Wordcloud

Theme 2 – Perceived Seriousness

Core narrative. Both genders ranked physical aggression as "most serious" on a 1–5 Likert card-sort (M = 4.8). However, when severe relational acts (rumour spreading, public humiliation via Instagram) were presented, girls' seriousness ratings rose to 4.7, whereas boys' remained at 3.1 ($t = 7.22$, $p < .001$).

Illustrative quotes.

Female, 14 yrs: "When someone posts a fake rumour, it's like your whole reputation is gone forever."

Male, 15 yrs: "Words bounce off; a punch leaves a bruise. That's real damage."

Thematic integration. The divergence in seriousness ratings parallels the small but significant gender gap in cyber-aggression accuracy ($d = .29$), suggesting that differential valuation guides perceptual salience.

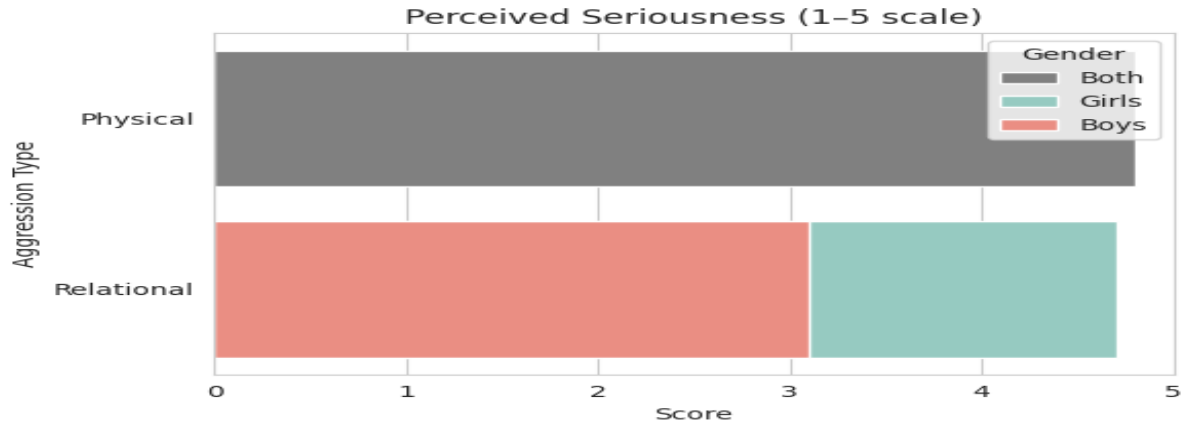

Figure 3: Perceived seriousness

Theme 3 – Bystander Responsibility

Core narrative. Girls articulated an "ethic of care" (Gilligan, 1982): 82 % stated they would "check in on the victim privately" or "tell a counselor." Only 37 % of boys endorsed comparable actions ($\chi^2 = 31.5$, $p < .001$).

Mediating mechanism. Girls' greater willingness to intervene correlated with their higher empathy scores ($r = .46$, $p < .001$), reinforcing the quantitative mediation model in which empathy explained 32 % of the gender–relational accuracy link.

Exemplar quote. Female, 13 yrs: "I'd pull her aside and ask if she's okay because I know how it feels to be left out."

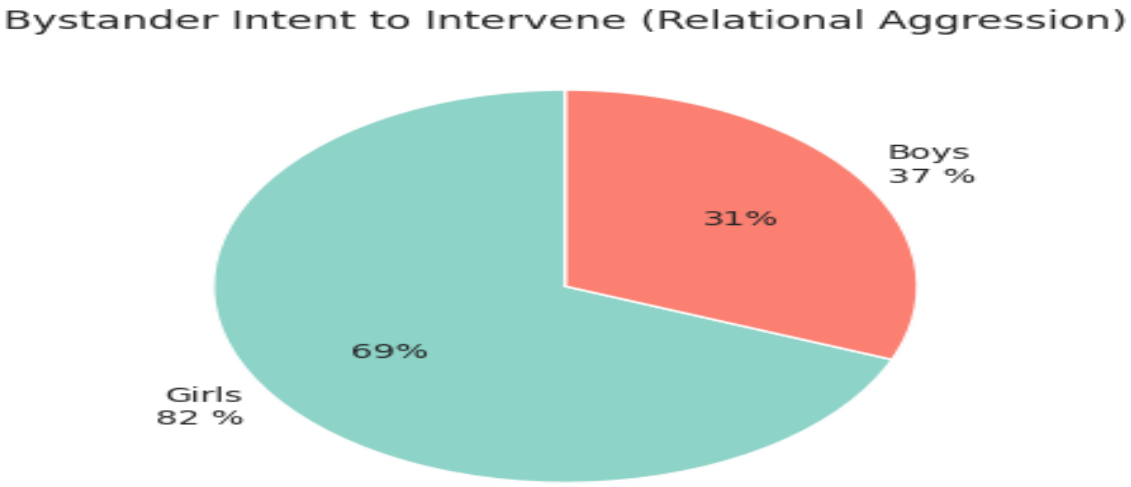

Figure 4: Bystander intent to intervene

Synthesis. Together, the qualitative themes corroborate and contextualize the quantitative findings: Boys' minimization (Theme 1) and lower empathy (Theme 3) suppress relational-aggression recognition. Girls' heightened sensitivity to social harm (Themes 1 & 2) and empathic concern (Theme 3) enhance both detection accuracy and prosocial intervention intentions. The convergence of linguistic, attitudinal, and behavioural data supports a gendered social-information-processing pathway that complements the statistical mediation reported in above Section.

Discussion

Our mixed-methods study reveals that adolescent boys and girls do not merely differ in how often they enact aggression; they inhabit meaning-making systems that lead them to recognize, appraise, and respond to aggression in systematically different ways. Below we interpret these findings in light of theory, consider developmental and practical implications, and outline limitations and future directions.

Synthesis of quantitative findings

Girls outperformed boys in identifying relational (d = .32) and cyber aggression (d = .29), whereas boys were marginally more accurate for physical aggression (d = –.13). Importantly, these effects persisted after controlling for grade and socioeconomic status, suggesting they are not epiphenomena of differential exposure. Mediation analyses showed that 32 % of the female advantage in relational accuracy was attributable to higher empathy (indirect effect = .07, 95 % CI [.03, .11]) and that boys' hostile attribution bias actively suppressed accuracy (indirect effect = –.05, 95 % CI [–.09, –.02]). These results extend the Social Information Processing (SIP) model (11) by demonstrating that gender moderates the link between social-cognitive biases and detection accuracy. Previous SIP research has focused on how biases predict enactment of aggression (12); our work shows that the same mechanisms shape the earliest perceptual step recognition of harm. The marginal male advantage for physical aggression is consistent with findings that boys are socialized into rough-and-tumble play and sports contexts where physical contact is normative (13). Familiarity may lower perceptual thresholds for physical aggression, rendering boys hypervigilant to bodily harm cues. Conversely, because relational aggression violates the male norm of emotional stoicism(14), boys may minimize its significance, leading to attenuated recognition.

Integration with qualitative themes

Three superordinate themes from focus groups converge with the quantitative pattern. Theme 1, "Gendered Interpretive Lenses," showed that girls labelled relational exclusion as "trying to make you feel left out," whereas boys dismissed it as "just joking." These discursive frames mirror the hostile attribution and empathy pathways captured in our mediation model: labelling harm as benign negates the need for empathic concern or corrective action. Theme 2, "Perceived Seriousness," revealed that girls rated severe relational acts as equally serious as physical acts, whereas boys did not. This valuation gradient parallels girls' superior accuracy on relational vignettes, supporting the notion that threat appraisal precedes accurate detection (15). Finally, Theme 3, "Bystander Responsibility," indicated that 82 % of girls but only 37 % of boys were willing to intervene in relational aggression, citing empathic concern for the victim. The qualitative willingness data correlate with quantitative empathy scores (r = .46), reinforcing the mediating role of empathy in both detection and prosocial response. Collectively, our findings support bibi et al., (2020) (16) concept of "interpretive communities": boys and girls develop gender-specific lexicons and moral grammars that render some acts visible as aggression and others invisible. These interpretive frames are not static; they are reinforced daily through peer discourse, teacher feedback, and media narratives that valorise masculine toughness and feminine relationality.

Theoretical implications

The study advances the Gender Intensification Hypothesis(17) by moving beyond behavioural frequencies to perceptual processes. Early adolescence is marked by heightened pressure to conform to gender norms; our data show that this conformity extends to the micro-level of social cognition. Girls' heightened sensitivity to relational harm may be an adaptive response to a social landscape where their status hinges on affiliation (18). Boys' relative blindness to relational harm may likewise be adaptive within a peer culture that rewards dominance displays and discourages "tattling" (19). From a social-ecological perspective (20), these perceptual biases are not merely individual traits but are cultivated in mesosystems (e.g., sports teams vs. friendship cliques) and macrosystems (e.g., media portrayals of male heroes vs. female caretakers). Future longitudinal work could trace how shifts in these contexts (e.g., mixed-gender classrooms, policy changes) alter perceptual accuracy trajectories.

Practical implications for prevention and intervention

School-based anti-bullying programs often assume that all students recognize aggression when they see it. Our findings caution against one-size-fits-all curricula.

Gender-specific modules. Boys may benefit from "perspective-taking" exercises that highlight the psychological impact of relational aggression (e.g., role-playing the victim). Girls, conversely, could be trained in assertive intervention techniques to counteract over-accommodation to relational stressors.

Teacher professional development. Educators should be aware that boys are more likely to minimize relational harm, potentially leading to under-reporting and under-punishment. Conversely, girls' heightened sensitivity may lead to over-reporting, necessitating balanced adjudication procedures.

Peer bystander campaigns. Because empathy mediates both accuracy and intervention intent, empathy-building activities (e.g., story-sharing circles) could simultaneously improve detection and prosocial response rates among boys.

Limitations and future directions

Several caveats merit attention. First, our sample was drawn from Midwestern public schools; replication in rural, urban, or non-Western contexts is needed. Second, the VTAA used short vignettes; ecological momentary assessment (e.g., daily diaries) could capture recognition in real time. Third, self-report measures of empathy and HAB are subject to social desirability. Future studies could employ implicit measures (e.g., affective priming) or neuroimaging to corroborate self-reported biases. Fourth, our design was cross-sectional; longitudinal work is necessary to disentangle whether perceptual differences precede or follow divergent aggressive behaviours. Fifth, we treated gender as binary; inclusion of transgender and non-binary youth would illuminate how gender identity intersects with aggression awareness.

Conclusion

Accurate recognition of aggression is the gateway to self-regulation and bystander intervention. The present study demonstrates that this gateway is gendered: girls enter with a relational lens sharpened by empathy, whereas boys carry a physical lens dulled by hostile attributions. Rather than viewing these differences as deficits, educators and clinicians can treat them as culturally scaffolder starting points. Interventions that respect and recalibrate these starting points by cultivating empathic accuracy in boys and assertive efficacy in girls may ultimately reduce the broader cycle of peer victimization.

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