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Relations Between Perceptions of Parental Messages Supporting Fighting and Nonviolence and Adolescents' Physical Aggression: Beliefs as Mediators

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Abstract

The purpose of this study was to examine adolescents' beliefs about fighting as mediators of longitudinal relations between perceptions of parental support for fighting and nonviolence and changes in adolescents' physical aggression. Participants were 2,575 middle school students (M_{age} = 12.20, SD = 1.02; 52% female; 83% African American) from the southeastern U.S. attending schools in communities with high rates of violence. Participants completed four waves of assessments every 3 months (i.e., fall, winter, spring, and summer). Each belief subscale mediated relations between perceptions of parental support for fighting and nonviolence and changes in aggression. Parental support for nonviolence was negatively associated with beliefs supporting reactive aggression and positively associated with beliefs against fighting. Parental support for retaliation was positively associated with beliefs supporting reactive and proactive aggression, and negatively associated with beliefs against fighting. Parental support for fighting as sometimes necessary was positively associated with beliefs supporting reactive aggression and beliefs that fighting is sometimes necessary. Beliefs supporting reactive and proactive aggression and beliefs that fighting is sometimes necessary were positively associated with aggression, whereas beliefs against fighting was negatively associated with aggression. Parents' support for fighting and for nonviolence may directly and indirectly reduce adolescents' physical aggression by influencing beliefs about the appropriateness of using aggression for self-defense and to attain a goal. This highlights the importance of jointly investigating multiple types of parental messages and types of beliefs about fighting.

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Patient consent statement. Written participant assent and parent/guardian consent were obtained.

Keywords

Aggression; parental messages; beliefs about aggression; adolescents

Physical aggression is common during adolescence (Wang et al., 2009), especially among youth living in communities burdened with high rates of violence (e.g., Farrell et al., 2018). Physical aggression predicts subsequent mental and behavioral health problems and academic difficulties (e.g., Polanin et al., 2021), highlighting the need for efforts to prevent physical aggression. Parental support for aggression represents a potential target for such efforts. Although parents may socialize youths' aggression through messages they convey encouraging or discouraging aggression or nonviolence (e.g., Farrell, Mays, et al., 2010; Garthe et al., 2015), few studies have examined the mechanisms through which parental messages influence adolescents' behavior. Social norms theory (Cialdini & Trost, 1998), discussed further subsequently, suggests that youths' beliefs about aggression may mediate relations between parents' support for aggression and youths' aggression. Although some cross-sectional support for this exists (O'Connor et al., 2020), research is needed to identify whether specific dimensions of beliefs mediate relations in these variables over time. The aim of this longitudinal study was to examine the role of adolescents' beliefs supporting fighting as a mediator of relations between perceptions of parental support for fighting and nonviolence, and physical aggression.

Relations Between Parental Messages and Physical Aggression

Previous studies have found that perceived parental support for fighting is a risk factor (e.g., Kramer-Kuhn & Farrell, 2016; O'Connor et al., 2020), and perceived parental support for nonviolence is a promotive factor (e.g., Coleman et al., 2023, based on longitudinal data from the current dataset; Garthe et al., 2015) for aggression. In a predominantly Black sample of middle school students, Kramer-Kuhn and Farrell (2016) found that adolescents' perceptions of parental messages supporting fighting were positively related to physical aggression in sixth and eighth graders, but not in seventh graders. A related study found that perceived parental support for nonviolence was negatively related to physical aggression among seventh graders, but not among sixth graders (Garthe et al., 2015). These findings indicate that distinct types of messages are differentially related to physical aggression.

Focusing on fighting as either appropriate or inappropriate may be too simplistic to capture the nuances parents may convey about situations in which they believe fighting may be necessary. Findings from two studies (Garthe et al., 2015; O'Connor et al., 2020) indicate that parental messages that hitting back is self-defense is the most prevalent message perceived by adolescents. Perceived parental messages that fighting is sometimes necessary were positively related to physical aggression in a predominantly Black sample of middle school students (O'Connor et al., 2020). The importance of this distinction is reflected in research that found distinct dimensions of adolescents' beliefs supporting reactive and proactive aggression, and beliefs that fighting is sometimes necessary (Farrell et al., 2019). This highlights the importance of identifying specific types of parental messages that predict aggression and whether beliefs about fighting mediate these relations.

Relations Between Beliefs and Physical Aggression

Capturing beliefs about fighting also requires consideration of multiple dimensions. Beliefs against fighting include beliefs that fighting is morally wrong or that it is ineffective (Farrell, Henry, et al., 2010). Prior research (e.g., Card & Little, 2006) supports differentiating between beliefs supporting reactive aggression, including beliefs that aggression is a justifiable response to negative emotions and perceived wrongdoing, and beliefs supporting proactive aggression, including beliefs that aggression is an appropriate way to achieve a goal. An additional dimension supported in prior research (Farrell et al., 2019) is the belief that fighting is sometimes unavoidable. Studies have found that beliefs against fighting and beliefs supporting aggression predict changes in aggression (e.g., Farrell, Pittman, O'Connor et al., 2022, based on longitudinal data from the current dataset; McMahon et al., 2013).

Relations Among Parental Messages, Beliefs, and Physical Aggression

Although several theories emphasize the role of beliefs in adolescents' behavior (e.g., social information-processing theory; Crick & Dodge, 1994), few studies have attempted to identify factors that influence beliefs. Findings supporting relations between adolescent's perceptions of parental messages and beliefs about fighting (Farrell et al., 2012; O'Connor et al., 2020) suggest that beliefs may serve as the mechanism that mediates the relations between parental messages and physical aggression. This is consistent with social norms theory, which postulates that perceived expected behavior within groups can influence behavior (Cialdini & Trost, 1998). Family norms may contribute to adolescents' beliefs about aggression (e.g., Copeland-Linder et al., 2007), which may then guide behavior. Supporting this idea, one cross-sectional study found differences in aggression across subgroups of adolescents who reported different patterns of perceptions of parental messages, and these differences were mediated by beliefs about aggression (O'Connor et al., 2020). However, existing research is limited because it is cross-sectional, making it impossible to determine the directionality and temporal nature of these relations. For example, youths' behaviors and parents' messages could change simultaneously due to contextual changes, or perceptions of parents' messages could change after youths' behavior changes. Therefore, more research is needed to understand the potential processes over time through which perceived parental messages and youths' aggression are connected.

The Present Study

This study examined adolescents' beliefs about fighting as mediators of longitudinal relations between perceived parental messages and changes in physical aggression. Its focus was on a predominantly Black sample of early adolescents living in under-resourced communities burdened by violence. This focus is relevant because youths in these groups tend to be exposed to high levels of community violence, which is a predictor of aggression (e.g., Coleman et al., 2023). The middle school years represent an appropriate time to identify predictors of aggression given academic, emotional, and social changes (Buchanan & Bowen, 2008). Physical aggression also tends to increase during middle school (Farrell et al., 2011), underscoring the need to inform strategies for intervention during this vulnerable stage. Although limited research has indicated that adolescents' perceived parental messages

are not strongly related to parents' actual messages (r = .17; Johnson et al., 2011), adolescents' perceptions may be more important for predicting their beliefs. For instance, one study found that whereas adolescents' perceived parental support for fighting predicted adolescents' beliefs about fighting, parents' actual messages did not (Copeland-Linder et al., 2007).

The goal of this study was to determine the extent to which adolescents' beliefs about fighting mediate relations between perceived parental messages about fighting and changes in adolescents' physical aggression. This longitudinal study addresses gaps in previous research, which have been limited by their cross-sectional designs. The premise of mediation is that the independent variable is followed in time by changes to the mediating variable, which is followed in time by changes to the outcome variable. Therefore, a longitudinal design is necessary to examine the temporality of a proposed mediation (MacKinnon, 2008). This study also contributes to existing research by examining specific dimensions of positive and negative views regarding aggression. It was hypothesized that (a) high levels of perceived parental messages supporting retaliation and messages that fighting is sometimes necessary and low levels of messages supporting nonviolence would predict high levels of beliefs supporting fighting and low levels of beliefs against fighting; (b) high levels of beliefs supporting fighting and low levels of beliefs against fighting would predict high levels of physical aggression; and (c) beliefs about aggression would mediate relations between perceived parental messages and changes in adolescents' physical aggression. This study has important implications for developing violence prevention programs by clarifying the mechanisms through which parents influence adolescents' behavior.

Method

Participants and Setting

This study was conducted using secondary analysis of existing data collected from 10 cohorts of students from three middle schools as part of an 8-year project (between 2010 and 2018) that evaluated the effectiveness of a bullying prevention program (Author citation). Schools were in a medium-sized city in the southeastern U.S. serving a predominantly Black student body. Most students (98%) were eligible for the federal free lunch program, which serves as a proxy for low socioeconomic status, because it provides low- or no-cost lunches to eligible children based on their family's receipt of federal assistance and their housing stability (USDA Food and Nutrition Service). The final sample of 2,575 students included 865 sixth-, 860 seventh-, and 850 eighth-grade students. Most self-identified as Black or African American (78%), 6% of whom identified additional racial identities. The remainder self-identified as White (6%), Alaska Native or American Indian (1%); or Asian, Native Hawaiian, or Pacific Islander (< 1%). Thirteen percent (most of whom identified as Hispanic or Latino) did not identify a racial identity. School records identified 48% as male adolescents and 52% as female adolescents, with a mean age of 12.3 years at Wave 1 (SD = 1.00).

Procedures

The evaluation project used a multiple baseline experimental design that randomized the order and timing of implementing the intervention. Data were collected every 3 months (i.e., fall, winter, spring, and summer) from students in participating schools during each project year. The project used a missing-by-design approach in which each student was randomly assigned to participate at two of the four waves each year. This reduces costs and burden on participants. Planned missingness designs result in data missing completely at random. This makes it possible to use full information maximum likelihood estimation, which makes use of all available data and provides unbiased estimates of relations that would have been found had all individuals participated at every wave (Graham et al., 2001). Although some participants participated in more than one grade, this was limited to less than 25% of the sample because the project's design included cohorts not present during all three grades and students recruited during a single school year. Therefore, analyses focused on examining changes across waves within the same school year. Eighty-three percent of eligible students provided data at both of their assigned waves. Students did not complete their waves because they (a) no longer attended the school (6%), (b) were unavailable (6%), declined (3%); and withdrew or were no longer eligible (2%). Data (4%) were excluded from analyses if staff reported the participant appeared to be responding randomly or the completion time suggested they did not read the items.

Research staff described the study to students and sent assent and consent forms home. Students who returned parent/guardian consent forms received $5 gift certificates regardless of whether they chose to participate. Written assent and consent were received from most of the eligible students (80%). Staff administered measures to groups of 20 to 30 students at schools during the school year or individually in students' homes or community sites during the summer. Participants completed measures in English on laptop computers. Students received $10 gift certificates for participating in each wave. All procedures from the larger project and use of anonymized data were approved by the university's Institutional Review Board.

Measures

Perceived Parental Messages Supporting Fighting and Nonviolence.—The 9-item Parental Messages About Fighting and Nonviolence Scale (Farrell, Mays, et al., 2010) measures youths' perceptions of messages from their parents/guardians about fighting and nonviolence. Adolescents rated the likelihood that their parents would make statements about the use of aggression versus nonviolence in various situations on a 4-point scale, ranging from 1 (*very unlikely*) to 4 (*very likely*). The scale's validity has been supported by correlations with self-reported physical aggression and class norms for aggression (Farrell et al., 2011). A confirmatory factor analysis identified three subscales: (a) Messages Supporting Retaliation (e.g., "It's okay to fight if someone else starts it," $\alpha = .76$, 3 items), (b) Messages Supporting Nonviolence (e.g., "If someone wants to fight you - walk away," $\alpha = .87$, 3 items), and (c) Messages that Fighting is Sometimes Necessary (e.g., "If you don't fight some teens, they'll just keep picking on you," $\alpha = .63$, 3 items).

Beliefs about Fighting.—The 19-item Beliefs About Fighting Scale (BAFS, Farrell et al., 2019) assesses youths' beliefs about the use of aggression and includes four subscales: Beliefs Supporting Proactive Aggression (e.g., "It's okay to yell at someone to get them to do things for you," 4 items, $\alpha = .76$), Beliefs Supporting Reactive Aggression (e.g., "It's okay to fight someone if they spread a rumor about you," 5 items, $\alpha = .86$), Fighting is Sometimes Necessary (e.g., "Sometimes a person doesn't have any choice but to fight," 5 items, $\alpha = .83$), and Beliefs Against Fighting (e.g., "Fighting is just wrong; it's a bad thing to do," 5 items, $\alpha = .82$). Adolescents rated how much they agreed with each item on a 4-point scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). The scale's validity is supported by correlations with self-reported aggression, nonviolence, and victimization (Farrell et al., 2017).

Physical Aggression.—The 5-item Physical Aggression subscale of the Problem Behavior Frequency Scale-Adolescent Report (Farrell et al., 2020) measures adolescents' frequency of physical aggression. Its validity is supported by correlations with teacher ratings of students' behavior (Farrell et al., 2018) and school office referrals for disciplinary code violations (Farrell et al., 2020). Participants rated their frequency of physical aggression (e.g., "Shoved or pushed someone") in the past 30 days on a 6-point scale, ranging from 1 (*never*) to 6 (*20 or more times*). The three highest anchors (6–9 times through 20 or more times) were merged to create a 4-point scale based on item response theory analyses (Farrell et al., 2020) and averaged to create a total score ($\alpha = .76$).

Analysis Plan

Analyses examined longitudinal changes across four waves within a school year and conducted between-group analyses to examine differences across independent samples of sixth-, seventh-, and eighth-grade students. Data from a single randomly selected grade were included for any student who participated in more than one grade. All analyses were completed in Mplus Version 8.2 (Muthén & Muthén, 2017) using robust maximum likelihood estimation (i.e., MLR) to address non-normal data. Missing data were addressed using full information maximum likelihood, which makes use of all available data to compute parameter estimates. The sandwich estimator was used to address non-independence resulting from nesting participants within groups based on school, grade, and cohort (Muthén & Satorra, 1995).

We conducted longitudinal unidirectional analyses in which parental messages subscales were modeled as exogenous variables to explicitly test mediation hypotheses. This provides clear tests of fit that avoid misspecification that could result from including bidirectional effects. Moreover, as noted by MacKinnon (2008), including mediators of effects in both directions violates the temporal precedence of the path from the predictor to the outcome via the mediators. We first conducted separate mediation models that paired one of the three parental messages subscales with one of the four belief subscales (see Figure 1). Testing separate models identified which specific parental messages subscales were associated with specific beliefs and with aggression, and which beliefs subscales mediated the relation between specific messages and aggression. Each model examined the extent to which beliefs at waves 2 and 3 mediated the relations between parental messages at the preceding wave

(i.e., waves 1 and 2, respectively) and changes in physical aggression at the subsequent wave (i.e., waves 3 and 4, respectively). Each model controlled for covariates (i.e., control phase, female sex, and sixth grade as reference groups) and included first and second order autoregressive effects for the belief subscales and aggression variable. Scores on the parental messages subscales at each wave were regressed on the covariates but were allowed to correlate with each other across all waves and with each belief subscale at all prior waves, enabling us to determine the effects for each potential mediator. We also tested a comprehensive multivariate model that included all the parental messages and belief subscales. This enabled us to determine the combined influence of all subscales, and the extent to which each parental messages subscale was uniquely related to each belief subscale and physical aggression.

The magnitude of the indirect effects through each of the mediators was estimated using bias-corrected bootstrap estimates (see MacKinnon, 2008). The consistency of cross-variable relations across season of year, sex, grade, and intervention phase was investigated by comparing unconstrained models that allowed coefficients to vary across waves or groups (i.e., sex, grades, and intervention phases) to constrained models that held them constant across waves or groups. Differences in model fit between the constrained and unconstrained models were examined based on the scaled chi-square difference test (Satorra & Bentler, 2010). Significance of all tests was assessed at $p < .05$. Model fit was assessed using the root mean square error of approximation (RMSEA), comparative fit index (CFI), and Tucker-Lewis index (TLI). Initial analyses indicated that constraining the relations across waves did not significantly reduce the model fit and fit the data well (RMSEAs = .00 to .02, CFIs = .98 to 1.00, and TLIs = .93 to 1.00), suggesting that there were no seasonal variations in patterns of relations across variables. Therefore, all models were simplified by constraining the cross-variable relations to be the same across waves.

Results

Descriptive Statistics

Means, standard deviations, and correlations among variables in the fall wave are reported in Table 1 (see Table S1 in the supplemental materials for correlations across all waves). Stability coefficients across adjacent waves ranged from moderate to high for the parental messages ($r = .32$ to .44) and belief ($r = .30$ to .56) subscales. Physical aggression was highly correlated across adjacent waves ($r = .51$ to .53). Correlations among the parental messages subscales within each wave varied in absolute value from $r = .06$ to .61, as did correlations among the belief subscales ($r = .07$ to .61 in absolute value). Within each wave, physical aggression was negatively correlated with messages supporting nonviolence ($r = -.11$ to $-.24$) and positively correlated with messages supporting retaliation ($r = .11$ to .17). Messages that fighting is sometimes necessary were significantly correlated with physical aggression within the fall ($r = .07$) and summer ($r = .09$) waves. Correlations between each belief subscale and physical aggression were correlated within each wave in the expected directions ($r = .08$ to .33 in absolute value). Most (i.e., 40 of 48) correlations between the parental messages and belief subscales were significant within each wave, ranging from .06 to .48 in absolute value.

Separate Tests of Mediation for Each Beliefs Measure

Messages Supporting Nonviolence Mediated by Beliefs—The messages supporting nonviolence subscale was positively related to beliefs against fighting (βs = .12, $p < .001$; see Table S2) and inversely related to beliefs supporting reactive aggression (βs = −.08, $p = .002$), but did not predict beliefs that fighting is sometimes necessary or beliefs supporting proactive aggression. Each belief subscale significantly predicted adolescents' physical aggression at all waves in the anticipated direction (βs = .05 to .11 in absolute value). Across waves 1 to 3 and waves 2 to 4, the relation between messages supporting nonviolence and physical aggression was fully mediated by beliefs supporting reactive aggression (βs = −.005 and −.006, 95% CIs = [−.012, −.002] and [−.014, −.002], respectively) and partially mediated by beliefs against fighting (βs = −.007 and −.008, 95% CIs = [−.016, −.002] and [−.018, −.002], respectively). Indirect effects were not significant through beliefs supporting proactive aggression or beliefs that fighting is sometimes necessary.

Messages that Fighting is Sometimes Necessary Mediated by Beliefs—The messages that fighting is sometimes necessary subscale was positively related to beliefs that fighting is sometimes necessary (βs = .12 at all waves, $p < .001$; see Table S3) and beliefs supporting reactive aggression (βs = .08 at all waves, $p = .003$). Messages that fighting is sometimes necessary did not, however, predict beliefs against fighting or beliefs supporting proactive aggression. Each belief subscale significantly predicted adolescents' physical aggression at all waves in the anticipated direction (βs = .03 to 13 in absolute value). Across waves 1 to 3 and waves 2 to 4, the relation between messages that fighting is sometimes necessary and physical aggression was fully mediated by beliefs supporting reactive aggression (βs = .007 and .009, 95% CIs = [.003, .014] and [.003, .018], respectively) and beliefs that fighting is sometimes necessary (βs = .006 and .007, 95% CIs = [.001, .011] and [.002, .014], respectively). Indirect effects were not significant through beliefs supporting proactive aggression and beliefs against fighting.

Messages Supporting Retaliation Mediated by Beliefs—The messages supporting retaliation subscale was positively related to each of the belief subscales in the expected direction (βs = .07 to .10 in absolute value at all waves; see Table S4). Three of the four belief subscales significantly predicted adolescents' physical aggression, with coefficients in the anticipated direction for beliefs against fighting (βs = −.09 at all waves, $p < .001$), and beliefs supporting reactive (βs = .09 at all waves, $p < .001$) and proactive (βs = .12 at all waves, $p < .001$) aggression. Beliefs that fighting is sometimes necessary did not predict adolescents' physical aggression. Across waves 1 to 3 and waves 2 to 4, the relation between messages supporting retaliation and physical aggression was fully mediated by beliefs supporting reactive aggression (βs = .011 and .013, 95% CIs = [.004, .020] and [.006, .025], respectively), beliefs supporting proactive aggression (βs = .008 and .010, 95% CIs = [.002, .020] and [.003, .024], respectively), and beliefs against fighting (βs = .010 and .012, 95% CIs = [.005, .017] and [.006, .021], respectively). The indirect effects were not, however, significant through beliefs that fighting is sometimes necessary.

Multivariate Mediation Model

The multivariate mediation model that included all three parental messages and four belief subscales was tested to assess their unique effects on changes in physical aggression, after accounting for one another. The messages supporting nonviolence subscale uniquely predicted beliefs against fighting and beliefs supporting reactive aggression in the expected directions (see Table 2). The messages that fighting is sometimes necessary subscale uniquely predicted higher levels of beliefs that fighting is sometimes necessary (βs = .10 at all waves, $p = .004$). The messages supporting retaliation subscale uniquely predicted lower levels of beliefs against fighting (βs = −.12 at all waves, $p < .001$), and higher levels of beliefs supporting reactive (βs = .12 at all waves, $p = .002$) and proactive (βs = .09 at all waves, $p = .012$) aggression. When all four belief subscales were included in the model, only beliefs against fighting and beliefs supporting proactive aggression uniquely predicted physical aggression. Beliefs against fighting were inversely related (β = −.05 at all waves, $p = .04$), whereas beliefs supporting proactive aggression were positively related (β = .09 at all waves, $p = .003$) to physical aggression. None of the parental messages subscales uniquely predicted changes in physical aggression after controlling for each of the parental messages and belief subscales.

Bias-corrected bootstrap confidence intervals representing the total indirect effects indicated that across waves 1 and 2 and waves 3 and 4, the four belief subscales in combination mediated the relations between parental messages supporting nonviolence and physical aggression (βs = −.013 and −.015, 95% CIs = [−.024, −.004] and [−.003, −.005], respectively) and between messages supporting retaliation and aggression (βs = .016 and .020, 95% CIs = [.005, .030] and [.007, .037], respectively). However, none of the specific indirect effects were significant, indicating that none of the beliefs uniquely mediated the relations between perceived parental messages and aggression.

Sensitivity Analyses—Sensitivity analyses were conducted to determine if the cross-variable relations varied across sex, grades, and intervention phases (see Table S5 in the supplemental materials). Unconstrained models that allowed cross-variable relations to vary across groups were compared with constrained models that held these relations constant across groups. There were no significant differences in coefficients across sex ($\Delta\chi^2[47] = 46.43$, $p = .50$), grades ($\Delta\chi^2[68] = 85.63$, $p = .07$), or intervention phases ($\Delta\chi^2[47] = 52.70$, $p = .26$), indicating that there were no variations in patterns of relations across sex, grades, and intervention phases.

Discussion

The purpose of this study was to examine whether youths' beliefs about fighting mediated relations between perceived parental messages about fighting and nonviolence and subsequent changes in physical aggression. Although there is evidence that parental messages predict youths' aggression (e.g., Author citation), few studies have attempted to identify the underlying factors responsible for this relation. Overall, there was support for social norms theory, as reflected in a general pattern in which perceived parental

messages about aggression predicted youths' beliefs about aggression, which predicted youths' physical aggression.

Associations Between Parental Messages and Beliefs

Youth who perceived that their parents supported nonviolence developed stronger beliefs against fighting and were less likely to believe that aggression was an appropriate response to provocation. All effects remained the same when all forms of messages were included in the model. These findings are consistent with cross-sectional results that adolescents whose parents support nonviolence reported high levels of beliefs against fighting and low levels of beliefs supporting reactive aggression (O'Connor et al., 2020). Items assessing messages supporting nonviolence include support for nonviolent alternatives (e.g., walk away if someone tries to start a fight). Adolescents who receive examples of nonviolence may develop beliefs that oppose using fighting as an effective way to solve problems. The absence of similar effects on beliefs that fighting is sometimes necessary and beliefs supporting proactive aggression may be explained by their correlations with messages supporting retaliation (r = .38 to .44) and messages that fighting is sometimes necessary (r = .23 to .40). Taken together, these findings provide partial support for the hypothesis that perceived parents' support for nonviolence would predict higher levels of beliefs supporting nonviolence.

The opposite was true for adolescents who perceive that their parents supported retaliation. As hypothesized, parents' support for retaliation predicted subsequent changes in each type of belief, in the expected direction. However, parents' support for retaliation did not predict beliefs that fighting is sometimes necessary when other types of messages assessed in this study were included in the model. These findings indicate that adolescents can discriminate between related messages, and that parental messages are more likely to predict closely related beliefs. Beliefs supporting aggression represent beliefs about when aggression is appropriate (e.g., Farrell et al., 2018). In contrast, beliefs that fighting is sometimes necessary represent general beliefs that conflict will continue if adolescents do not respond aggressively, whereas beliefs against fighting represent general beliefs that fighting is morally wrong or ineffective. These findings indicate that perceived parents' support for fighting predicts situation-specific beliefs about when fighting is acceptable and general beliefs for and against fighting.

Adolescents' perceptions that their parents' support the idea that fighting is sometimes necessary predicted beliefs that fighting is sometimes necessary and beliefs supporting reactive aggression, in the expected direction. However, beliefs supporting reactive aggression was no longer significant when the two other parental messages subscales were included in the model. Consistent with cross-sectional findings (O'Connor et al., 2020) and social norms theory (Cialdini & Trost, 1998), these findings indicate that perceptions of parents' support for fighting as sometimes necessary contribute to adolescents' general beliefs that aggression is unavoidable and beliefs that aggression is an appropriate reaction to conflict. Parents may convey messages about the acceptability of aggression in certain circumstances if they believe it will prevent their child from being victimized, which may be the norm for adolescents exposed to violence (Richards et al., 2015). Perceived messages

that fighting is sometimes necessary may then be integrated into adolescents' belief system, further highlighting the role of perceived family norms in the development of beliefs about fighting.

Beliefs as Mediators

All four categories of beliefs mediated the relations between at least one of the parental message constructs and physical aggression, which is consistent with existing theories (e.g., social norms theory, Cialdini & Trost, 1998) and prior findings (O'Connor et al., 2020). Each of the three parental messages subscales predicted beliefs supporting reactive aggression, which then predicted youths' physical aggression. Beliefs about reactive aggression represent beliefs that aggression can be used in response to frustration or perceived offenses (e.g., Farrell et al., 2012). These findings suggest that perceived parental messages play a unique role in the development of defensive beliefs. Youth living in under-resourced communities are exposed to high levels of violence (Richards et al., 2015). Parents in these communities may be likely to provide messages that support fighting, which may contribute to adolescents' beliefs that aggression is adaptive and necessary to defend themselves. Of note, when all parental messages were included in the model, none of the beliefs were significant mediators. This is likely because the parental messages subscales were correlated with each other, so it would be difficult to parse out unique mediation. Given the importance of parental messages on adolescents' beliefs about fighting and aggression, integrating parental messages within prevention and intervention programs could reduce adolescents' physical aggression. Some existing school- and family-focused interventions include parent training, focusing on improving parental warmth, behavior reinforcement, and monitoring (e.g., Fagan & Catalano, 2013). Parent training components should also focus on encouraging parents to discuss circumstances in which aggression may be justified and when it is not. The reinforcement of nonviolent behavior, such as walking away, may also be added to discussions about behavior reinforcement.

Limitations

This study has several limitations. Because adolescents completed all the measures, it is possible that findings were inflated due to this monomethod approach (see Meyer et al., 2001). However, self-report offers a perspective that differs from parents and teachers regarding adolescents' beliefs and behaviors (e.g., De Los Reyes & Kazdin, 2005). This study focused on perceived parental messages. However, there are other factors within adolescents' lives, such as community and peer factors (Farrell, Pittman, Bettencourt et al., 2022; Farrell, Pittman, O'Connor et al., 2022; both based on longitudinal data from the current dataset), that may impact their beliefs, which may then influence their behaviors. Although effect size estimates were small in this study, this is common in longitudinal studies when variables have high stability and concurrent cross-variable correlations (Adachi & Willoughby, 2015). Small effect sizes are likely for indirect effects because they are based on the product of main effects. This study was based on secondary analysis, such that some data were collected during the implementation of a bullying prevention intervention. The intervention did not attempt to focus on parental messages, and intervention effects were controlled for in the models. In addition, there was no expectation that the intervention would impact relations among the variables. The use of a relatively homogenous sample of

Black middle school students living in high violence communities makes it unclear whether these findings will generalize to more heterogeneous samples. It is possible that similar findings would exist for adolescents from other ethnic groups or countries exposed to high rates of violence. It is also likely that findings may differ across age groups, as parental influences (e.g., parental involvement; Farrell et al., 2011) are stronger in younger stages and tend to decrease over time. Future research with different samples should examine the extent to which these findings generalize to individuals with varying socioeconomic statuses, ethnicities, and ages.

Conclusion

Consistent with social norms theory, findings of this study indicate that beliefs about aggression mediate longitudinal relations between perceived parental messages about fighting and about nonviolence and subsequent changes in adolescents' physical aggression. Beliefs about aggression may serve as key mechanisms through which parents influence their youths' aggression. Findings of this study underscore the need to focus on more nuanced measures of parental messages and beliefs by assessing specific types of messages and beliefs. Parents are likely to indicate situations in which aggression may be necessary and appropriate but are also likely to indicate situations when this is not the case. Interventions need to include more conversations around the situations in which aggression may be appropriate and when it is not. More research is needed to identify additional processes through which parents influence the trajectory of aggression during early adolescence.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgement.

The current manuscript was based on analyses of longitudinal data collected from 10 cohorts of students as part of an 8-year project. Studies based on analyses of data from this same project have examined bidirectional relations between violence exposure and physical aggression (Farrell et al., 2020), peer factors (Farrell, Pittman, Bettencourt et al., 2022) and beliefs (Farrell, Pittman, O'Connor et al., 2022) as mediators, and peers (Coleman & Farrell, 2021) and adults (Coleman et al., 2023) as moderators of the relation between violence exposure and physical aggression.

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Data availability statement.

Participant data will not be made available.

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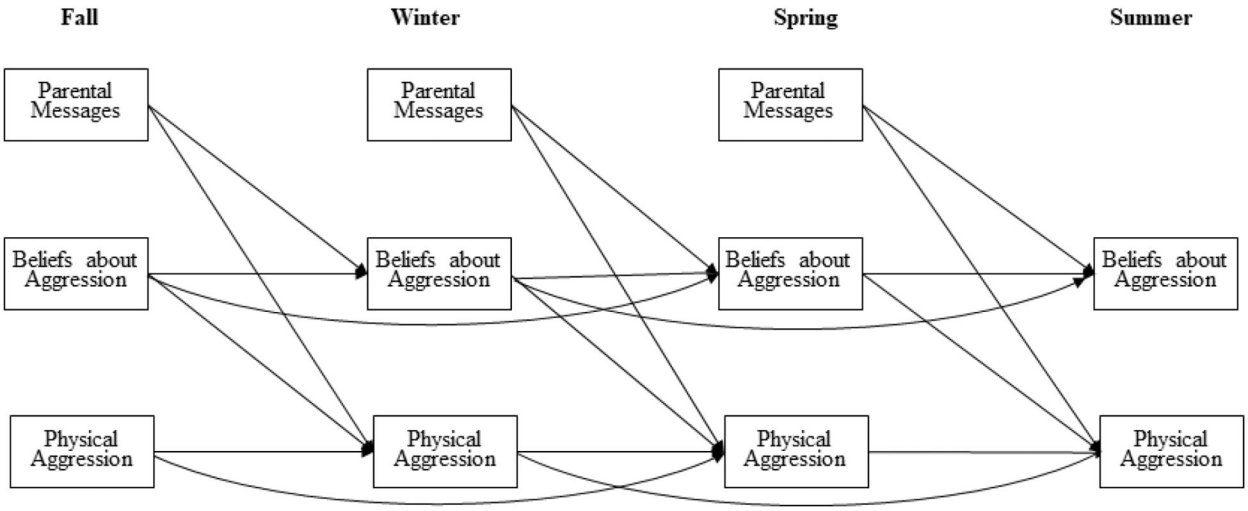

Figure 1.

One-Sided Path Model Representing Each Belief Variable as a Mediator of Relations Between Parental Messages and Subsequent Changes in Physical Aggression

Note. Parental messages variables and belief subscales were regressed on the covariates (i.e., sex, grade, and intervention phase), but were other treated as exogenous variables (i.e., they were allowed to correlate with each other across waves, and with physical aggression at the prior and current waves). Covariates were included in the model, but are not shown to reduce figure complexity. The figure also does not show covariances across residual variances for all variables within each wave, which were included in the model.

Table 1

Means, Standard Deviations and Correlations Among Wave 1 Parental Messages, Beliefs, and Physical Aggression Variables

Variable	1	2	3	4	5	6	7	8
1. Messages supporting nonviolence	-							
2. Messages supporting fighting is sometimes necessary	.24***	-						
3. Messages supporting retaliation	−.06*	.50***	-					
4. Beliefs against fighting	.45***	.20***	.04	-				
5. Beliefs supporting fighting is sometimes necessary	.06*	.40***	.38***	.31***	-			
6. Beliefs supporting proactive aggression	−.16***	.23***	.44***	.22***	.57***	-		
7. Beliefs supporting reactive aggression	.18***	.00	.19***	−.08**	.22***	.40***	-	
8. Frequency of physical aggression	−.11***	.07*	.15***	−.08**	.22***	.28***	.24***	-
Mean	2.65	2.64	2.16	2.83	2.52	2.04	1.34	1.39
Standard Deviation	1.09	0.92	0.94	0.88	0.90	0.86	0.54	0.53

Note. N = 2,575.

*$p < .05$. *$p < .01$. *$p < .001$.

Table 2

Standardized Regression Coefficients and Standard Errors for Waves 1 and 2 for the Multivariate Model of all Four Belief Variables as a Mediator of Relations Between Parental Messages Variables and Physical Aggression

	Wave 2									
	Beliefs against fighting		**Beliefs fighting is sometimes necessary**		**Beliefs supporting reactive aggression**		**Beliefs supporting proactive aggression**		**Frequency of physical aggression**	
Wave 1 predictors	**β**	**SE**	**β**	**SE**	**β**	**SE**	**β**	**SE**	**β**	**SE**
Intervention phase	−.13***	.03	−.07*	.03	−.05	.03	−.05	.03	−.07*	.03
Grade 7	−.04	.03	.01	.03	.00	.03	.01	.03	.01	.03
Grade 8	−.04	.03	−.04	.03	−.02	.03	.01	.03	−.05	.03
Male sex	−.08**	.03	−.04	.03	−.05	.03	−.00	.03	−.04	.03
AR1[a]	.42***	.05	.51***	.03	.47***	.04	.34***	.06	.50***	.05
Messages supporting nonviolence	.12***	.03	−.05	.03	−.12***	.03	−.05	.03	−.06*	.03
Messages fighting is sometimes necessary	.02	.04	.10**	.04	.06	.03	−.04	.04	.00	.03
Messages supporting retaliation	−.12***	.03	.06	.03	.12**	.04	.09*	.04	−.00	.03
Beliefs against fighting	*b*	*b*	*c*	*c*	*c*	*c*	*c*	*c*	−.05*	.02
Beliefs fighting is sometimes necessary	*c*	*c*	*b*	*b*	*c*	*c*	*c*	*c*	.03	.03
Beliefs supporting reactive aggression	*c*	*c*	*c*	*c*	*b*	*b*	*c*	*c*	.01	.03
Beliefs supporting proactive aggression	*c*	*c*	*c*	*c*	*c*	*c*	*b*	*b*	.09**	.03

Note. N = 2,575. AR1 = Lag 1 autoregressive effects.

[a] Lag 1 autoregressive effect of Wave 2 variable on its Wave 1 score.

[b] Coefficient for this variable is reported under autoregressive lag 1 effect.

[c] Variable not included in the model for this dependent variable.

* $p < .05$.

** $p < .01$.

*** $p < .001$.