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## **I like you, do you like me? How gender, context, and aggression predict liking.**

Eu gosto de você, você gosta de mim? Como o gênero, o contexto e a agressão predizem o gostar.

¿Me gustas, te gusto? Cómo el género, el contexto y la agresión predicen el gusto.

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### **Abstract**

Prosocial behaviors are correlated with positive relationships and acceptance by peers while aggression is correlated with negative relationships and rejection by peers. Peer aggression is also negatively correlated with peer liking, though the relationship may differ based on gender and norms. The current study examines the relationship between the different forms of aggression (physical, verbal, relational) and peer liking. The study asked 148 students from five classrooms in Curitiba, Brazil to complete peer nominations of their classmates and nominate students who were aggressive as well as rate how much they liked each peer. Multilevel modeling was used to analyze the data. Overall, girls were better liked than boys, and girls tended to like boys less than boys liked girls. Physical, verbal, and relational aggression all improved the overall model, and are important to understanding the full picture. Boys who were high in relational aggression liked other relationally aggressive boys less and girls who were less relationally aggressive liked more relationally aggressive girls less. Children high in physical aggression like physically aggressive peers more and this relationship was stronger for

girls. In classrooms high in overall physical aggression, however, physically aggressive girls liked their physically aggressive peers less, indicating that context plays a key role. Key-words: aggression, gender, relationship.

### **Resumo**

Os comportamentos pró-sociais estão correlacionados com relacionamentos positivos e aceitação pelos pares, enquanto a agressão está correlacionada com relacionamentos negativos e rejeição pelos pares. A agressão de colegas também é negativamente correlacionada com o gosto de colegas, embora o relacionamento possa diferir com base no gênero e nas normas. O presente estudo examina a relação entre as diferentes formas de agressão (física, verbal, relacional) e o gosto dos colegas. O estudo solicitou a 148 alunos de cinco salas de aula em Curitiba, Brasil, que concluíssem as nomeações de colegas de turma e indicassem estudantes agressivos, além de avaliarem o quanto eles gostavam de cada colega. A modelagem multinível foi usada para analisar os dados. No geral, as meninas eram mais queridas que os meninos, e as meninas tendiam a gostar menos de meninos do que os meninos. A agressão física, verbal e relacional melhorou o modelo geral e é importante para entender a imagem completa. Garotos com alta agressão relacional gostavam menos de outros garotos relacionalmente agressivos e garotas menos agressivas com relacional gostavam menos de garotas relacionalmente agressivas. As crianças com alta agressão física gostam mais de colegas fisicamente agressivos e esse relacionamento era mais forte para as meninas. Nas salas de aula com alta agressão física geral, no entanto, as meninas fisicamente agressivas gostam menos de seus colegas fisicamente agressivos, indicando que o contexto desempenha um papel fundamental.

**Palavras-chave:** agressão, gênero, relacionamento.

### **Resumen:**

Los comportamientos prosociales se correlacionan con las relaciones positivas y la aceptación por parte de los compañeros, mientras que la agresión se correlaciona con las relaciones negativas y el rechazo por parte de los compañeros. La agresión entre iguales también se correlaciona negativamente con el gusto entre iguales, aunque la relación puede diferir según el género y las normas. El estudio actual examina la relación entre las diferentes formas de agresión (física, verbal, relacional) y el gusto de los compañeros. El estudio solicitó a 148 estudiantes de cinco aulas en Curitiba, Brasil, que completaran las nominaciones de sus compañeros de clase y nominaran a los estudiantes que eran agresivos, así como que calificaran cuánto les gustaba cada compañero. Se utilizó el modelado multinivel para analizar los datos. En general, a las niñas les gustaban más que a los niños, y a las niñas solía gustarles menos a los niños que a los niños. La agresión física, verbal y relacional mejoró el modelo general y es importante para comprender la imagen completa. A los niños con un alto nivel de agresión relacional les gustaban menos otros niños relacionalmente agresivos y a las niñas que eran menos agresivas relacionalmente les gustaban menos las niñas más agresivas relacionalmente. A los niños con alto nivel de agresión física les gustan más los compañeros físicamente agresivos y esta relación fue más fuerte para las niñas. Sin embargo, en las aulas con una alta agresión física general, a las chicas físicamente agresivas les gustaban menos sus compañeros físicamente agresivos, lo que indica que el contexto juega un papel clave.

**Palabras-clave:** agresión, género, relación.

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## Introduction

Childhood relationships with peers have a crucial impact on social, cognitive, and emotional development (e.g., Rubin, Bukowski, & Laursen, 2009). Children who have positive peer relationships, and in turn are more accepted by their peers, are more likely to have interactions that result in positive developmental experiences. Positive developmental experiences are associated with better mental health, better school performance, and higher levels of adjustment (Rubin, Bukowski, & Parker, 2006; Wang, Ianotti, & Luk, 2011). In contrast, children who are not accepted by their peers are more likely to be victimized, have poorer grades, poorer school performance, and more mental health issues (Berg, Lansu, & Cillessen, 2015; Boulton, Trueman, & Murray, 2008; Weijun et al, 2014). There are broad and important effects of early peer relationships, and it is imperative to examine how such experiences contribute to development in other ways. For example, one area of interest is identifying what role peers play in the development of youth outside the typically studied samples.

Prosocial behaviors tend to be correlated with peer acceptance while peer aggression tends to be correlated with peer rejection. Though, the effect of aggression on peer relationships is not clear. Past research on peer aggression, mostly conducted in western, educated, industrialized, rich and democratic (WEIRD) samples, has identified that the effect of aggression on acceptance and rejection may depend on the gender of the students and the context they are in (Henrich, Heine, Norenzayan, 2010). Girls, who are typically shown to engage in relational aggression more often, tend to face harsher consequences when they engage in physical aggression. Boys, who typically engage in more physical aggression, face harsher consequences when they engage in relational aggression. This suggests that to some degree the 'normal' aggression for each gender is more accepted than other forms of aggression. The context of the situation may have a role in how much students are accepted or rejected following aggression. Classrooms high or low in aggression may provide context for acceptable behavior and correspondingly decrease or increase the consequences for engaging in such behavior.

One of the consequences of engaging in physical, verbal, or relational aggression is the potential for peers/students to no longer like that aggressive student. Liking is positively associated with peer acceptance, though they are separate concepts with differing outcomes. The same is true for disliking and peer rejection. Aggression is

typically found to be negatively correlated to liking and positively correlated with disliking, while the opposite relationships are true for rejection. For many of these findings, studies were conducted in WEIRD samples, however. Most of the world does not fit into this WEIRD category and may even have relationships that differ drastically from those found in WEIRD samples. In one multi-national study, aggression significantly helped to predict loneliness in Chinese children, but not in Canadian, Brazilian, or Italian children, indicating that aggression and other social-emotional facets that were measured, may have differences based on the culture.

The current study examines aggression and peer liking in a Brazilian sample, which is beneficial due to Brazil's unique mix of cultures, races, and individualistic and collectivistic viewpoints (Chen et al, 2004). Brazil is also not considered a WEIRD sample and conducting research on non-WEIRD samples may benefit our collective understanding of aggression and the developmental outcomes of children engaging in aggressive behaviors. The current study examines the effect of physical aggression, verbal aggression, and relational aggression on peer liking. The approach of the study is also unique in that a dyadic, child and group perspective is used which allows for a better and more complete understanding of the relationship between aggression and peer liking. Gender and classroom norms serve as moderators for the relationship which help to further explain the relationship between aggression and liking by accounting for situational variables.

Peer nominations serve as a peer informant measure and can be used to collect data on which children are liked, not liked, accepted, or rejected. Peer nominations allow children to report which of their peers they like, do not like, view as popular, or view as unpopular. Peer nominations also allow children to report which of their peers are aggressive, which can provide information on hard to view behaviors such as relational aggression. The use of peer nominations is particularly useful considering how much time children spend with their peers. Peer nominations have an advantage over other methods for evaluating children as peers tend to see each other on most days and know how the child behaves in a group (Coie & Dodge, 1988; Rubin & Cohen, 1986). While objectivity may be a concern, children seem to be more likely to be objective in their assessments of others than self-reports or parental reports which would be more likely to be biased (e.g. Clarke & Ladd, 2000). Additionally, peer nominations allow for liking to be assessed which may not be possible with other measures.

There are many factors that contribute to whether a child is accepted or rejected by their peers. Some research shows that aggression has mixed effects on the level of acceptance or rejection, and this may have to do with gender and the context in which it occurs (Lynch, Kistner, Stephens, and David-Ferdon, 2016). Others show that increased aggressive behaviors lead to peer rejection (Ettekal and Ladd, 2015). Peer rejection is tied to peer victimization and can lead to maladjustment, poor grades, and other developmental issues (Crick et al., 2006; Lansford et al., 2010; Preddy & Fite, 2012; Spieker et al., 2012). Prosocial behaviors tend to be tied to peer acceptance which in turn is associated with better developmental outcomes (Bukowski & Newcomb, 1984; Coie et al., 1992; Dodge, Coie, & Brakke, 1982).

Peer liking is associated with popularity and acceptance, though they are separate concepts. Children tend to like peers who are more like themselves, and as most children and adolescents fall into a category of students who are not aggressive or victimized, it follows that most children would like other children who are not aggressive (Tenney, Turkheimer, and Ottmanns, 2009). Aggression has been shown to be negatively correlated to liking and verbal aggression, specifically, leads to peers being both less popular and more disliked by their peers (Hopmeyer Gorman, Schwartz, Nakamoto, and Mayeux, 2011). There appears to be a difference between being unpopular and being disliked. Unpopularity is associated with loneliness, relational victimization, and fewer numbers of reciprocated friends, but not with lower academic performance. Being disliked by peers has been associated with lower academic performance. While the two are conceptually similar, they lead to different outcomes.

#### Peer Aggression

Children may engage in aggressive behaviors with their peers. These aggressive behaviors can be verbal, relational, and physical in nature and the different forms of aggression may have different effects on peer acceptance/rejection or liking/disliking. Aggression is often cited as a positive correlate of peer rejection and a negative correlate of peer acceptance, though gender and norms play a role (Bass et al., 2016; Bukowski & Newcomb, 1984; Coie et al., 1992; Dodge, Coie, & Brakke, 1982). The type of aggression that children engage in may differ across development and may differ based on gender and classroom norms (Ettekal and Ladd, 2015; Ettekal and Ladd, 2017). Younger children tend to engage in more physical aggression and verbal aggression, but less relational aggression, while older children and early adolescents seem to engage in

more relational aggression. Additionally, peer aggression may predict peer victimization (Santo, Bass, Stella-Lopez, and Bukowski, 2017).

#### Gender Differences

Peer relationships are important, and gender may play a role in the development of peer relationships. Studies have been mixed on the degree of effect sex has on peer aggression and victimization, but most agree that it plays some role. Broadly it is believed that females are more likely to engage in relational aggression than their male counterparts and males are more likely to engage in verbal and physical aggression (Donoghue & Raia-Hawrylak, 2016). There are differences in the effect of aggression on liking based on sex. Girls tend to be less physically aggressive than boys and when they are physically aggressive with their peers, they tend to be more disliked because of it (Santo, Bass, Stella-Lopez, & Bukowski, 2017). Boys tend to be more physically aggressive, and thus this is the type of aggression that is most 'accepted' for boys. When boys are relationally aggressive, they tend to face more consequences than when they are physically aggressive. Overall, aggression is less tolerated from girls than boys and this may lead to a sex difference in overall aggression and peer liking.

#### Group Norms

Finally, normative group behaviors provide context for the standards of acceptable and expected behavior within that group. These normative behaviors can influence how peers interact with and view each other. Children who go against the group norms may be less popular than their conforming peers. Alternatively, children who are similar to their peers and behave in similar ways are more liked (Boor-Klip, Segers, Cillessen, and Hendrickx, 2017). Thus, children may conduct themselves in a more aggressive way when they are in a context that is made up of more aggressive peers. In a more aggressive classroom, higher aggression may not be tied to lower levels of liking while in classrooms low in aggression, an aggressive student may be less liked (Isaacs, Voeten, and Salmivalli, 2013). Social norms at the classroom level may be relevant to understanding social dynamics. Each classroom provides a unique context for the students within that class and there may be between classroom variability based on the aggression levels present in the students in that class. Classroom norms can modify the consequences of the behaviors. Classroom norms can effectively change the interpretation of behaviors and the subsequent peer evaluations and reactions to those behaviors.

The purpose of the current study is to examine how different forms of aggression are associated with how much children are liked by their same-sex peers. Same-sex peers tend to receive much higher popularity ratings than other-sex counterparts, thus same-sex peer nominations will be analyzed in the current study. It is hypothesized that increased aggression (physical, relational, and verbal) will lead to decreases in liking. The relationship between aggression and liking will be moderated by gender such that the relationship between physical aggression and liking will be stronger for girls and the relationship between relational aggression and liking will be stronger for boys. Due to the prevalence of same-sex peer relationships and lack of relationships with the opposite sex, only same sex peer nominations will be analyzed. This may also differ depending on the norms of the class, such that in classrooms that are more aggressive overall, the strength of the relationships between increased aggression and decreased liking will be weakened.

## Method

### Participants

The sample consisted of 148 adolescents ( $M_{age} = 14.11$ ,  $SD = 1.10$ ) from 5 classrooms (45.9% Male, 54.1% Female). Data collection took place in Curitiba Brazil and all participants were in 7<sup>th</sup> and 8<sup>th</sup> grade. Participants were recruited from urban schools and were primarily from lower middle to upper middle SES schools. This is supported by a subjective socioeconomic status (SES) scale, which participants completed. The scale ranged from 1 to 10 and the average was 5.40 ( $SD = 1.05$ ) and 83.1% of the sample rated themselves between 4 and 6 (detailed further below).

### Procedures

All measures were translated from English into Portuguese by local collaborators. Informed consent was obtained prior to data collection, specifically schools' principals provided consent. On the day of data collection, written assent was obtained from the participants. All data were collected at the school during regular class time (60-90 minutes).

### Measures

**Demographic Information.** Participants self-reported their age and gender. The researchers acquired information about the grade level of the participating classes in each sample from the administrators at each school. Participants also provided a self-report of their perceived socioeconomic status (SES) via the MacArthur Scale of Subjective Social

Status (Goodman et al, 2001), which uses a 10-rung “social ladder” pictorial format. Participants respond by placing an “X” on the rung of the social ladder which they feel best represents their socioeconomic status. Responses range from 1 to 10, with higher ratings indicating higher self-perceived SES.

**Liking ratings.** Each participant was given a list with the name of each of the other participants in the class (both same- and other-sex participants) and was asked to rate how much they liked each of the people on the list. Participants were not asked to rate themselves. The rating scale was as follows: 1 (do not like this person), 2 (usually do not like this person), 3 (sort of like this person), 4 (usually like this person), and 5 (like this person very much).

**Peer Assessment.** Using an edited version of the Revised Class Play (Masten, Morison, & Pelligrini, 1985), similar to the liking ratings, children were given a list of every participating member of the class but with the addition of a number of roles/items. Participants were asked to nominate same-sex and other-sex classmates who best represented each role. For each item, participants were asked to indicate all students from their class roster that fit each description of characteristics or behaviors. Scores for each of these scales were determined from the mean number of nominations received from same-sex classmates for each item of the scale. Only same-sex nominations were used because they have been found to provide a more valid assessment of these descriptions (Coie, Dodge, & Coppotelli, 1982). Peer nominations rather than self-report ratings were used in the current report because of the potential for participants to be reluctant to admit to (or unaware of) committing or receiving negative behaviours, such as aggression (Bjorkqvist, Lagerspetz, & Kaukiainen, 1992; Lagerspetz et al., 1988).

Three roles were included in the current report: physical aggression, verbal aggression, and relational aggression. Physical aggression was comprised of two items (“Someone who hits or pushes people” and “Someone who gets involved in physical fights”) with a Cronbach’s alpha of .83. Verbal aggression was comprised of two items (“Someone who makes fun of others to hurt them” and “Someone who calls others bad names”) with a Cronbach’s alpha of .73. Relational aggression was comprised of two items (“Someone who talks bad about others behind their backs to hurt them” and “Someone who tries to keep others out of the group”) with a Cronbach’s alpha of .60.

**Norms of Aggression.** Norms of aggression were computed by taking the mean level of each type of aggression for the same-sex peer group, as measured by the RCP



items. Therefore, same-sex peer group norms reflect the mean level of each type of aggression in the same-sex peer group. High scores indicate a greater prevalence of aggression in the group.

**Statistical Analysis.** Prior to hypothesis testing, descriptive statistics were analyzed for liking ratings, peer nominations of aggression, and same-sex peer group-levels of aggressive behavior. Correlations were conducted to assess the association between the various forms of aggression at the individual and same-sex peer group levels, and t tests were used to test for gender differences in the number of nominations for each form of aggression.

Multilevel modeling conducted with HLM ver. 7.00 (Bryk & Raudenbush, 1992) was used to assess whether variation in individuals' ratings of their peers varied as a function of the peers' characteristics (specifically aggression and gender) and as a function of individual and same-sex peer group characteristics. Because liking ratings of all peers were nested within individuals and analyses included both within-individual and between-individual variables, hypotheses were assessed using multilevel modeling to address the nonindependence of the data. With peer liking as the criterion variable, the full model consisted of two levels of predictor variables. As each variable was added to the model, the hypothesized relationships were assessed for statistical significance, reduction in prediction error, and improvement of model fit. The first level of the model consisted of the within-individual-level variables of each form of aggression (entered one at a time) followed by peer gender differences. The second level of the model consisted of individual-level variables added in the following order: gender, individual aggression, gender by aggression interaction, same-sex peer group norms of aggression followed by the two-way and three-way interactions.

## Results

### Descriptive Statistics

We observed that there were gender differences for physical aggression ( $t(146) = 2.80, p < .01$ ) with boys ( $M=0.36, S.D. = 1.81$ ) scoring higher than girls ( $M= -0.30, S.D. = 1.00$ ). For relational aggression however ( $t(146) = -3.10, p < .01$ ), girls ( $M= 0.32, S.D. = 1.60$ ) scored higher than boys ( $M=-0.38, S.D. = 1.08$ ). There were no gender differences in verbal aggression though. Zero order correlations between the study variables are provided.

## Hypothesis Testing

Multilevel modeling analyses began with the assessment of a within-subjects “unconditional model” that included only the dependent variable (adolescents’ ratings of their peers) so that we could compute the proportion of variability at the individual level and between individuals (the intra-class correlation). The intra-class correlation revealed that a large portion of the variance in liking was at the within-individual level (77.02%) with the remaining variability being between individuals (22.98%). Nevertheless, null hypothesis testing indicated that there was significant amount of between group variability ( $\chi^2_{(124)} = 1153.61, p < .05$ ).

Hypothesis testing began by first entering the peers’ nominations of verbal aggression as a correlate of peer liking. When entered into the model, verbal aggression significantly negatively predicted peer liking ( $b = -0.04, S.E. = .02, t_{(124)} = 2.29, p < .05$ ). The addition of verbal aggression led to a proportional reduction in prediction error (PRPE) of 3.43%, reflecting a significant improvement to the model ( $\Delta\chi^2_{(4)} = 38.78, p < .05$ ). Next, physical aggression was included in the model, it was not significantly associated with peer liking overall ( $b = 0.02, S.E. = .03, t_{(124)} = .87, p > .05$ ). Adding physical aggression did significantly improved the model ( $\chi^2_{(3)} = 41.60, p < .05$ ) and led to a further reduction in prediction error of 4.16%. Finally, relational aggression was added as a correlate of peer liking. It was significantly negatively related to peer liking overall ( $b = -0.06, S.E. = .02, t_{(124)} = 2.90, p < .05$ ). However, with the addition of relational aggression, verbal aggression was no longer a significant predictor overall.

Tests of variability in the associations between form of aggression with peer liking however were significant ( $\chi^2_{(124)} = 159.52-241.36, p < .05$ ) reflecting differences between individuals in the associations of aggression with peer liking. This further bolsters the analytic approach of the current study to elucidate the between-individual variability.

The final within-individual predictors included in the model were the gender of the peer and any interactions between gender and each form of aggression. Girls (in general) received more favorable ratings ( $b = 0.11, S.E. = .03, t_{(124)} = 3.24, p < .05$ ) reducing prediction error in the model by 6.05% significantly improving the model ( $\Delta\chi^2_{(5)} = 116.41, p < .05$ ). None of the effects of aggression however varied as a function of the peer’s gender, only reducing prediction error by .12%, not significantly improving the models. The final within-individual model provided us with five distinct types of between individual differences. Specifically, we could explain variability in liking ratings given

to peer overall (i.e.: the intercept), the effect of the peer's gender and differences in the associations between liking and each form of aggression (verbal, physical and relational).

Table 1. Final multilevel model results.

Predictor	b (S.E.)	t (df)
<b>Intercept</b>	3.11 (.06)	53.78 (123)*
Child Gender	-.07 (.06)	-1.19 (123)
<b>Peer Gender</b>	.12 (.04)	3.33 (123)*
Child Gender	.21 (.03)	6.03 (123)*
<b>Peer Physical Aggression</b>	.04 (.03)	1.18 (118)
Child Gender	-.01 (.03)	-0.33 (118)
Child Physical Aggression	.11 (.02)	4.43 (118)*
Child Gender by Child Physical	.11 (.02)	5.28 (118)*
Norms of Physical Aggression	-.11 (.05)	-2.09 (118)*
Child Gender by Physical Norm	-.11 (.05)	-2.14 (118)*
Child Physical by Physical Norm	.02 (.02)	0.63 (118)
<b>Peer Verbal Aggression</b>	-.02 (.03)	-0.71 (118)
Child Gender	.01 (.02)	0.56 (118)
Child Verbal Aggression	.01 (.01)	0.70 (118)
Child Gender by Child Verbal	-.01 (.01)	-0.56 (118)
Norms of Verbal Aggression	-.02 (.02)	-1.13 (118) <sup>†</sup>
Child Gender by Verbal Norm	.00 (.02)	-0.22 (118)
Child Verbal by Verbal Norm	-.01 (.01)	-0.71 (118)
<b>Peer Relational Aggression</b>	-.09 (.02)	-3.95 (118)*
Child Gender	-.01 (.02)	-0.34 (118)
Child Relational Aggression	.00 (.01)	-0.22 (118)
Child Gender by Child Relational	.02 (.01)	1.99 (118)*
Norms of Relational Aggression	.00 (.05)	-0.05 (118)
Child Gender by Relational Norm	-.05 (.05)	-0.90 (118)
Child Relational by Relational Norm	.05 (.03)	1.82 (118)
<i>Peer Gender by Physical</i>	.00 (.03)	0.12 (2913)
<i>Peer Gender by Verbal</i>	.02 (.02)	1.09 (2913)
<i>Peer Gender by Relational</i>	-.01 (.02)	-0.21 (2913)

Main effects are aligned to the left of the table. Two-way interactions are indented once and three-way interactions are indented twice. Level 1 effects allowed to vary between-subjects (i.e. random effects) are highlighted in bold while fixed effects are italicized.

\* $p < .05$ . Note: One effect (denoted with a “<sup>†</sup>”) was detailed in the results section although it was no longer significant in the final model.

Next, we began testing for differences as a function of the individual in liking ratings of peers by first looking at the gender of the rater (liking overall, peers' gender and the effect of each form of aggression). There was one significant effect in that the ratings of peers were higher for same-sex peers. It's worth noting that boys rated girls more negatively than girls rated boys (figure 1). The addition of gender reduced prediction error (PRPE = 32.06%) and significantly improved the model ( $\Delta\chi^2_{(1)} = 41.97$ ,  $p < .05$ ).

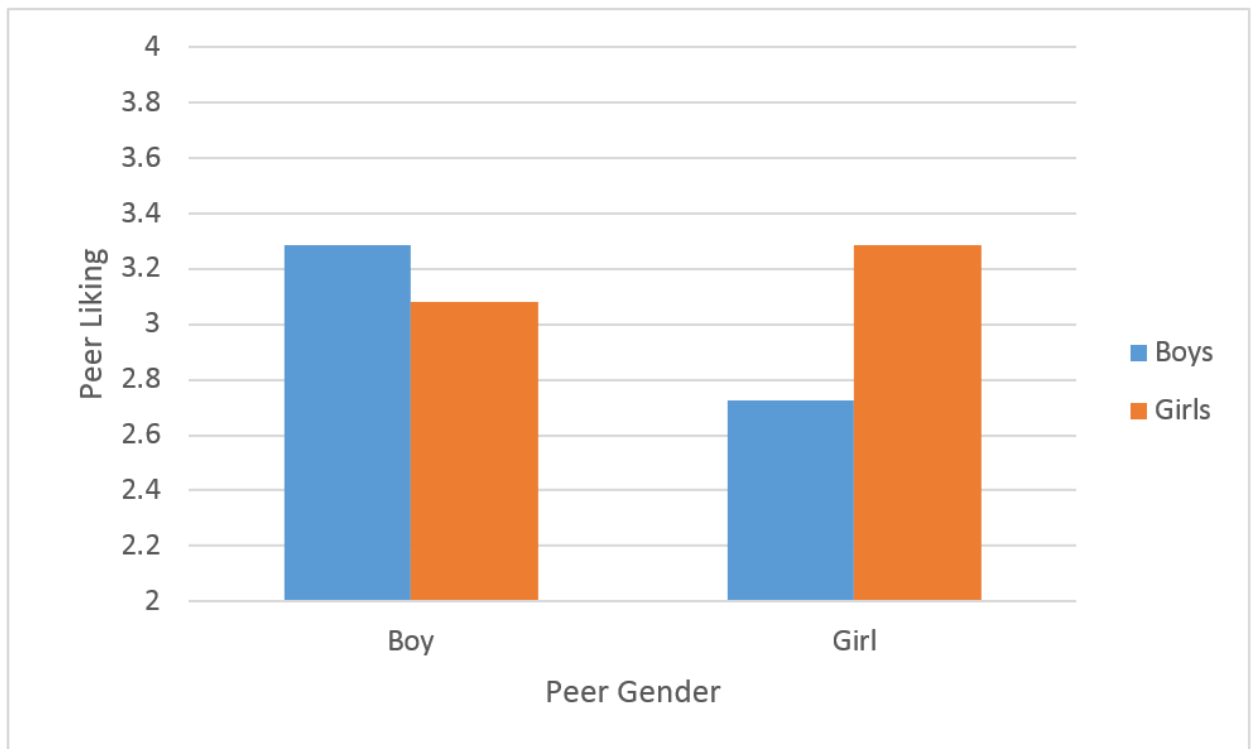


Figure 1. Gender differences in the differential liking of boys and girls.

Note: The range of the y-axis has been edited to highlight the effects. The full range of liking ratings went from 1 to 5 ( $M = 3.07$ ,  $S.D. = 1.24$ ).

We then tested a model using the individual's peer nominations of each form of aggression (physical, verbal and relational) as a moderator of the effect of the peer's aggression on liking. Interestingly, two effects emerged supporting the notion that similarity between adolescents and their peers on a specific behavior is associated with more liking or less disliking (depending on form of aggression). Specifically, the association between peers' physical aggression was a stronger correlate of peer liking among those higher in peer nominations of physical aggression (figure 2a). In addition, the association between peers' relational aggression was a weaker negative correlate of peer liking among those higher in peer nominations of relational aggression themselves (figure 2b). The addition of the child's aggressive behavior nominations to the slope of the peer's aggression reduced prediction error for physical aggression (PRPE = 12.79%) improving the estimation ( $\Delta\chi^2_{(1)} = 9.56$ ,  $p < .05$ ) and reduced prediction error in for relational aggression (PRPE = 4.34%) also improving the estimation ( $\Delta\chi^2_{(1)} = 4.28$ ,  $p < .05$ ).

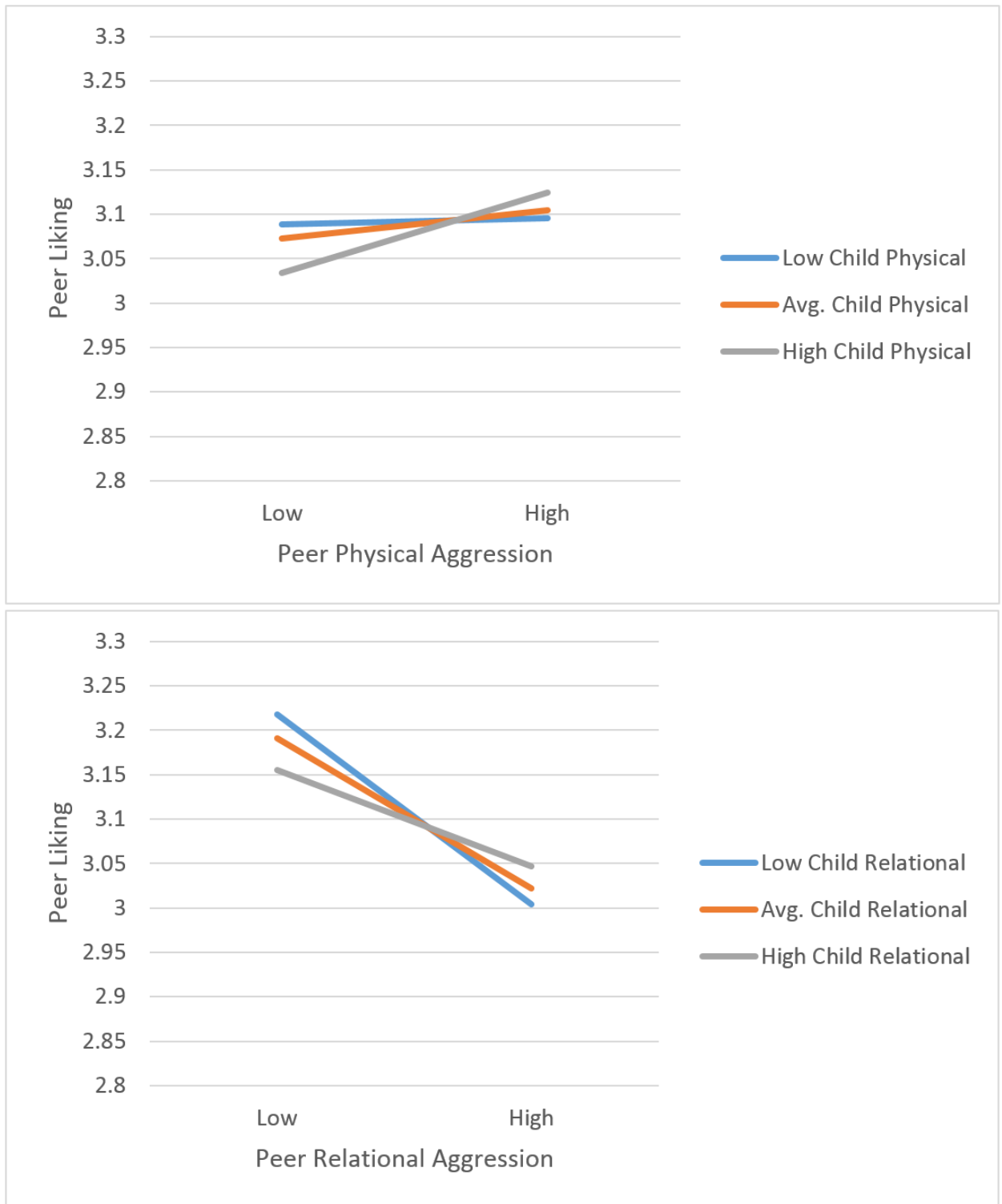


Figure 2a and 2b. The moderating role of the child's aggression on the association between peers' physical (top panel) and relational aggression (bottom panel) and peer liking. Note: The full range of liking ratings went from 1 to 5 ( $M = 3.07$ ,  $S.D. = 1.24$ ).

Next, the child's gender by aggression interaction was added to model as a moderator of the effect of the peer's aggression on liking. The previous effects of physical and relational aggression were further differentiated by the child's gender. To explain,

for the peers physical aggression, girls were more likely to like girls high in aggression when they high in aggression themselves. Whereas boys were uniform in their liking of physically aggressive regardless of whether they or low themselves (figure 3a). There was a different pattern of effects for relational aggression however in that among boys higher in relational aggression they disliked relational aggressive peers more. For girls however, those high in relational aggression disliked their relationally aggressive peers less (figure 3b). The addition of the child's gender by aggressive behavior interaction to the slope of the peer's aggression reduced prediction error for physical aggression (PRPE = 35.07%) improving the estimation ( $\Delta\chi^2_{(1)} = 21.73, p < .05$ ) and reduced prediction error for relational aggression (PRPE = 40.24%) also improving the estimation ( $\Delta\chi^2_{(1)} = 4.09, p < .05$ ).

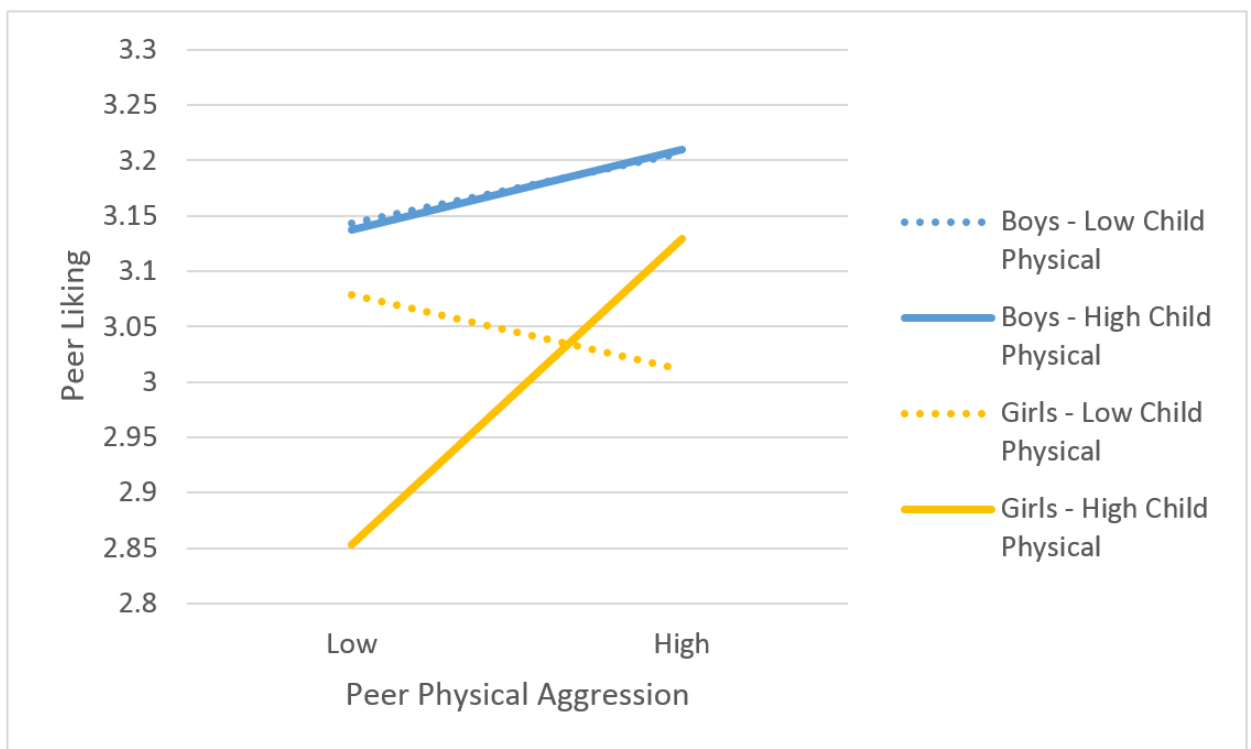


Figure 3a and 3b. The gender by aggression interactions on the association between peers' physical (top panel) and relational aggression (bottom panel) and peer liking. Note: The full range of liking ratings went from 1 to 5 ( $M = 3.07, S.D. = 1.24$ ).

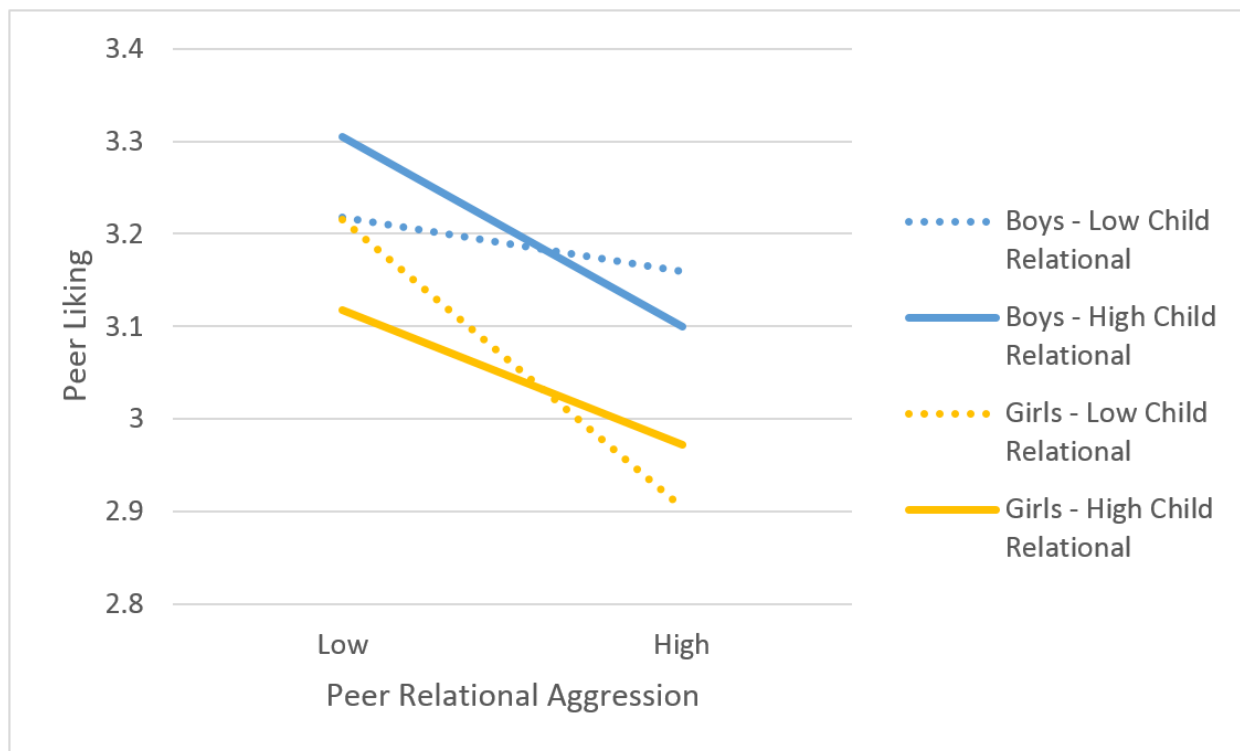


Figure 3a and 3b. The gender by aggression interactions on the association between peers' physical (top panel) and relational aggression (bottom panel) and peer liking. Note: The full range of liking ratings went from 1 to 5 ( $M = 3.07$ ,  $S.D. = 1.24$ ).

Lastly, same-sex peer group norms mean levels of both relational and physical aggression were added to model as additional moderators of the effect of the peer's aggression on liking. The previous effects of physical aggression was further qualified even more by the norms of aggression. To explain, for the peers' physical aggression is was more strongly associated with liking among same-sex peer groups lower in physical aggression (figure 4a). In addition, the norms of verbal aggression moderated the effect of peers' verbal aggression. Specifically, for verbal aggression peers' aggression was more strongly associated with disliking among same-sex peer groups higher in verbal aggression (figure 4b). The addition of the same-sex peer group's norms of aggressive behavior to the slope of the peer's aggression reduced prediction error for physical aggression ( $PRPE = 13.53\%$ ) improving the estimation ( $\Delta\chi^2_{(1)} = 4.91$ ,  $p < .05$ ) and reduced prediction error for verbal aggression ( $PRPE = 4.89\%$ ) also improving the estimation ( $\Delta\chi^2_{(1)} = 4.17$ ,  $p < .05$ ).

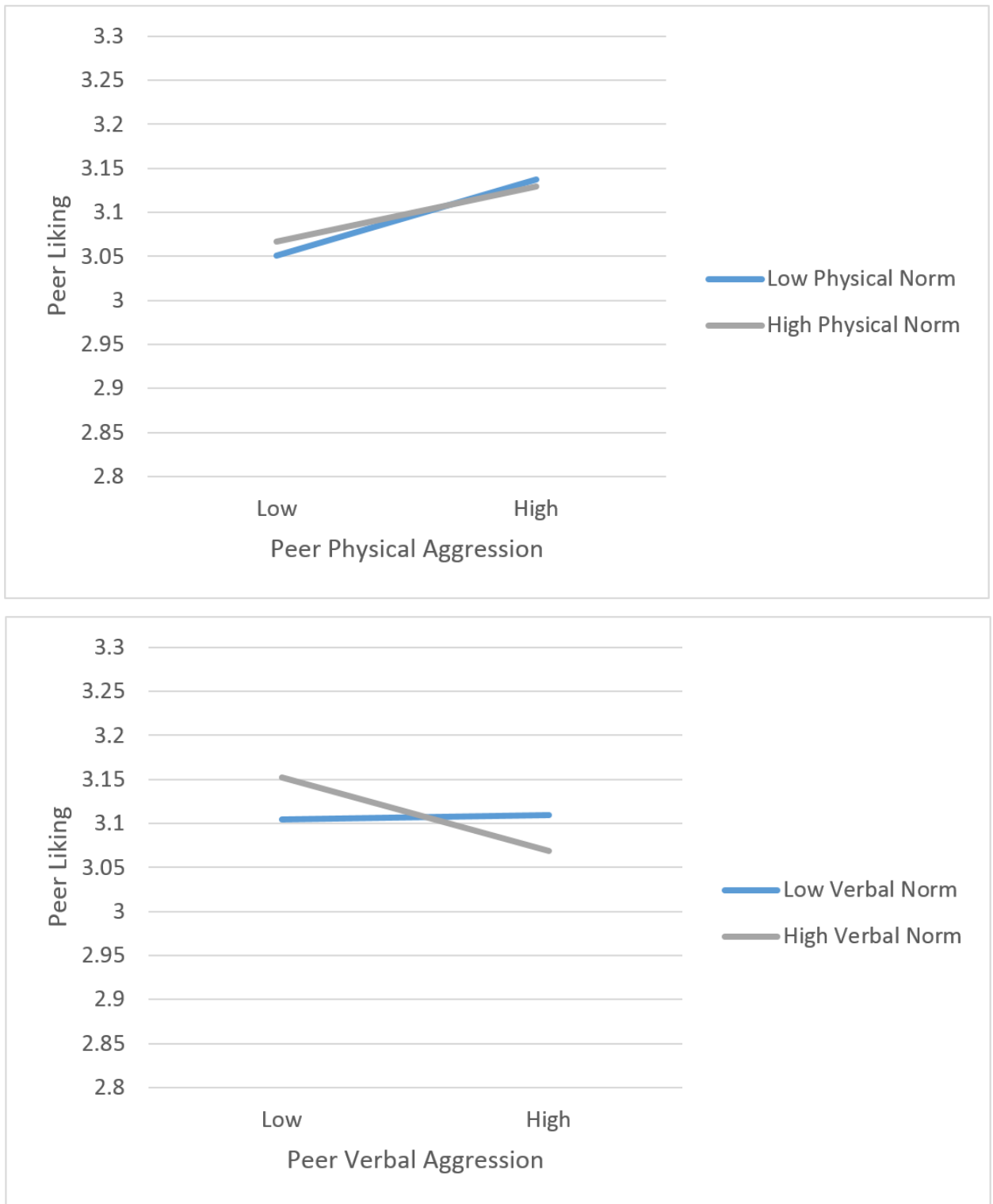


Figure 4a and 4b. The moderating aggression norms on the association between peers' physical (top panel) and verbal aggression (bottom panel) and peer liking. Note: The full range of liking ratings went from 1 to 5 ( $M = 3.07$ ,  $S.D. = 1.24$ ).



Finally, the interaction between gender and the same-sex peer group norms of aggression were included as the final predictors in the model. One significant effect emerged. Specifically, there was a gender by same-sex peer group physical aggression interaction on the association between peer's physical aggression and liking. To explain, among girls in groups high in physical aggression, peers' aggression was negatively associated with liking whereas among same-sex peer groups low in physical aggression, the association was positive (figure 5). The addition of the gender by same-sex peer group's norms of aggressive behavior interaction to the slope of the peer's aggression reduced prediction error for physical aggression by an additional 24.09% once again improving the estimation ( $\Delta\chi^2_{(1)} = 11.72, p < .05$ ).

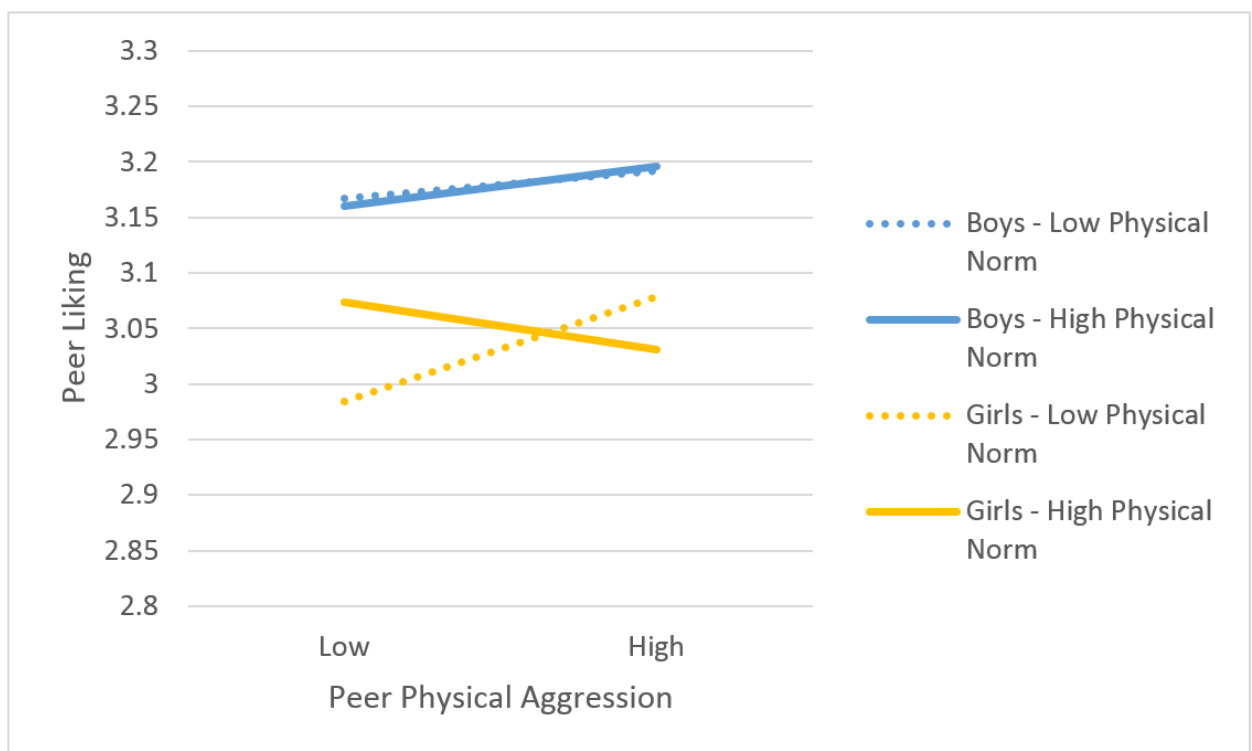


Figure 5. The gender by norm of aggression interaction on the association between peers' physical (top panel) and relational aggression (bottom panel) and peer liking. Note: The full range of liking ratings went from 1 to 5 ( $M = 3.07, S.D. = 1.24$ ).

## Discussion

The current study aimed to take a fine-grained analysis of the associations between same-sex peers' ratings of three forms of aggression and children's liking of their classmates. Beyond identifying differences in the strengths of the associations

between each type of aggression, our goal was to delineate the role that individual characteristics (again using peer ratings of aggression) play in the childrens' liking of their classmates. Finally, we were also able to test whether aspects (i.e.: descriptive norms) of the same-sex peer group moderated any of the associations outlined above.

Overall, aggression predicts liking. However, the relationship between aggression and liking differs based on the type of aggression. Verbal and relational aggression are negatively associated with peer liking while physical aggression is positively associated with peer liking overall. In the final model, not all forms of aggression were significantly associated with peer liking. However, their inclusion as correlates did significantly improve the model, suggesting their importance in understanding aggression altogether. Further, not all forms of aggression are looked at the same by peers. While children who engaged in verbal and relational aggression were less liked by their peers, those who engaged in physical aggression tended to be more liked. While this does not suggest that peers should be physically aggressive to one another, it does suggest that aggression in different forms is viewed and accepted differently.

The effects between aggression and liking were significantly moderated by the gender of the child. Additionally, there were gender differences in overall liking with girls being liked more than boys. While all forms of aggression significantly improved the model, most of the differences were seen in relational and physical aggression, though there was an effect of verbal norms. Girls high in physical aggression tended to like their physically aggressive peers more while girls low in aggression liked peers about equally whether they were aggressive or not. Boys both low and high in aggression tended to like boys similarly regardless of level of aggression on the part of the peer. However, this was further moderated by the classroom setting. Interestingly, in classrooms high in aggression, girls high in aggression liked their more aggressive peers far less and girls low in aggression tended to like their more aggressive peers more. Boys tended to like all classmates similarly. More than having a good personality, people tend to like others who are similar to them (Tenney, Turkheimer, & Ottmanns, 2009). However, in a group a person will not likely be friends with every member of the group, especially in a classroom setting with a large number of students (McAdams, 2015). Thus, there must be discrimination among characteristics over which to bond. In a classroom where students are more generally aggressive, it may follow that students must look beyond that trait to other more unique traits in order to form bonds. This would mean that simply because a

student is aggressive, they may not like other aggressive students. Yet in classrooms with low levels of aggression, students may feel more of a connection to other aggressive students because that is now the defining characteristic and they view each other as more similar whereas in a high aggressive classroom they may not. Being similar to one another may breed liking among these more aggressive students in low aggression classrooms.

Boys and girls also differed in regard to relational aggression. In general children high in relational aggression were liked less than their non-relationally aggressive peers, but boys tended to like relationally aggressive peers more than girls. Additionally, the relationship between relational aggression and lower levels of liking was strongest for boys high in relational aggression and girls low in relational aggression. That is, boys high in relational aggression tended to like their relationally aggressive peers less and girls low in relational aggression tended to like their relationally aggressive peers less.

Most of the observed differences in liking stemmed from within subjects' factors, but a significant amount of the variability was explained by between subjects factors. This suggests that while factors relating to the individual have the largest effect in determining liking, outside factors and norms also play a role in the liking of peers.

The current study expands on the extant literature by employing an examination of dyadic, child and group (Bukowski, Rubin & Parker, 1998) approach. To explain, first we examined the peers' characteristics as correlates of how liked they were by their classmates. Moreover, we also tested whether these associations differed based on the raters' aggressive behavior (based on peer nominations). Lastly, we examined how aspects of the same-sex peer group (namely norms of aggressive behavior) also played a role in determining how children how liked by their peers. Although the models were build up in a hierarchical fashion, the final model examined all of the factors simultaneously. To our knowledge, this is the first study to benefit from such a fine-detailed and big-picture approach.

In addition, the current study is strengthened through the use of a community-based sample from an understudied population (specifically, adolescents from Brazil). To explain, we examined the associations between multiple forms of aggressive behavior and liking among adolescents attending regular schools. As such, our data reflects a more ecologically valid sample of the ways in which aggressive behavior is expressed within public schools. Related to that notion, there is a dearth of literature examining the role

that aggressive behavior plays in liking of peers beyond samples from North America (Heinrich, Heine & Norenzayan, 2010). As such, the current sample again reflects a more ecologically valid representation of adolescent aggressive beyond than seen in more WEIRD samples. Finally, it's worth mentioning that the current study is also strengthened by our examination of multiple forms of aggression (simultaneously). Instead of examining aggression as a homogenous block, we instead chose to take a nuanced view of the associations with different forms of aggression leading providing us with a more complicated (and hopefully therefore more realistic) understanding of how it's associated with liking among adolescents.

Nevertheless, the current study is not without some drawbacks. The most glaring is that the sample all came from one school from an urban setting. Future studies would benefit from examining all of these associations using a number of different schools from a range of settings (including variability in socio-economic status, SES). Related to the above, having data from only one school also limited our ability to use a three-level model to more accurately capture the variability at the level of the same-sex peer group. In the current study, we lacked the degrees of freedom to split the same-sex peer groups apart but a larger future study could expand on this. Finally, the results of the current study would be further improved if we were able to capture a greater range of differences between same-sex peer groups. Though SES differences was alluded to earlier, there are a number of aspects of the same-sex peer group (from individualism/collectivism to classroom climate) which would have expanded on the current findings.

In sum, it is our hope that future researchers continue to examine how multiple forms of aggressive behavior are associated with peer liking from a dyadic, child and group perspective. Moreover, later studies on this topic should recruit larger more varied samples to better elucidate the role that same-sex peer group characteristics (as measured through the norms) play a role in determining how peers' aggressive behavior is associated with liking among adolescents. Lastly, it would be interesting to explore how liking is associated with different forms of aggression as the foundation for understanding (i.e.: mediates) differences in how aggressive behavior is associated with peer victimization.

## **Conclusion**

Aggression is typically viewed as a positive correlate of peer rejection and negative correlate of peer liking. The results described here imply that aggression may have different outcomes based on the type of aggression, the gender of the aggressor, and the context they are in. Physical aggression may not be as bad as relational aggression, as for girls, physical aggression increased liking when the target girl was physically aggressive herself. Thus, not all aggression is bad and may even lead to children being able to connect to other students. This is not to say that aggression should be encouraged in children or that it is the best thing to form peer relationships, but it does not all lead to rejection and may, in fact, lead to more acceptance. Alternatively, it might be the case that in contexts high in aggression this becomes the standard form of connection, in what could be called a “culture of violence”. Due to the differences seen in the forms of aggression, this may suggest that aggression as a whole is less useful to be studied than the distinct forms of aggression and they can have different and conflicting impacts on peer relationships. Finally, though aggression may be used as a strategy to connect to peers, other related outcomes may be negatively affected (specifically peer victimization).

This study also shows that the context of the situation can alter how behavior is viewed and can change the outcomes of engaging in certain types of behavior. While physically aggressive girls tended to like other physically aggressive girls more overall, this relationship was further moderated by the classroom norms. In summary, if our goal is to improve the lives of adolescents by creating school environments free of aggression, it is to our advantage to better understand how different forms of aggressive behavior is perceived as “acceptable” by the peer group. These findings suggest that a situation, actions, and outcomes are all dependent on the context in which they occur.

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