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BRIEF REPORT

Social Learning of Cyberbullying Perpetration: The Interactive Role of Parent and Peer Cyberbullying and Cyberbullying Reinforcement in a Sample of U.S. Adolescents: A Brief Report

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Cyberbullying has emerged as a societal issue, and the prevalence rates juxtaposed with the deleterious outcomes afforded the cyberbully perpetrator and victim alike warrant continued empirical attention. The current research is the first study to utilize social learning theory to test the (a) direct relationship between cyberbullying reinforcement and cyberbullying in an adolescent sample and (b) the moderating and mediating roles of parent and peer cyberbullying perpetration. U.S. adolescents ($N = 200$; average age = 15.64 years) completed measures of cyberbullying perpetration, cyberbullying reinforcement, peer cyberbullying perpetration, and parent cyberbullying perpetration. Results showed that self, parent, and peer cyberbullying were highly correlated and that peer cyberbullying perpetration had the highest prevalence. Moreover, moderation tests showed that adolescent cyberbullying was highest when peer cyberbullying, parent cyberbullying, and cyberbullying reinforcement were also high. Finally, cyberbullying reinforcement mediated the relationship between peer, but not parent, cyberbullying and participant cyberbullying.

Keywords: cyberbullying, cyberbullying reinforcement, social learning

The internet is ubiquitous. Indeed, recent survey data suggest that 97% of U.S. adolescents use the internet daily, and 46% report being online "almost constantly" (Vogels et al., 2022). The ability to communicate with others across the world and obtain information at near instantaneous speeds has resulted in mostly positive outcomes in nearly all sectors (e.g., medical, financial, retail, educational) across the industrialized world. However, there are some who use the internet for nefarious purposes, such as cyberbullying—defined as repeatedly harming others using electronic communication (Englander et al., 2017; Smith et al., 2008). Cyberbullying has emerged as an important societal issue. Although prevalence rates vary greatly (likely due to differences in measurement, populations sampled, and other artifacts; Rivers & Noret, 2010), recent survey data suggest that 46% of youth have been attacked online—offensive name-calling being the most frequently reported form of cybervictimization (32%; Vogels, 2022). Understanding the predictors of cyberbullying perpetration is paramount for informing interventions aimed at reducing this form of antisocial behavior. Therefore, the purpose of the present study is to better understand the parent, peer, and reinforcement predictors of cyberbullying perpetration. We applied social learning theory (SLT) to our study due to our focus on reinforcement juxtaposed with the subjective perception of peers' and parents' cyberbullying as predictors of U.S. youth cyberbullying behavior.

SLT and Cyberbullying Perpetration

Bandura's SLT—later his social cognitive theory (Bandura, 1989)—posits that an individual's social behavior is likely a product of personality and environmental factors, which may be learned from the observation of another's behavior (Bandura, 1985). In their seminal work, Bandura et al. (1963a) had child participants view either a real person assaulting a toy Bobo doll, a real person on film assaulting a toy Bobo doll, a cartoon character assaulting a toy Bobo doll, or a control group before being allowed free play. Results showed higher aggression during free play for participants in all three experimental conditions compared to the control. Meta-analytic reviews support SLT postulates across myriad antisocial behaviors, including (a) media violence and aggression (Bushman & Huesmann, 2006), (b) the cycle of abuse (Hotaling & Sugarman, 1986), (c) the intergenerational transmission of spousal abuse (Stith et al., 2000) and criminal behavior (Besemer et al., 2017). In short, social learning and cognitive theories offer an important and unique perspective on aggression (cf. Bandura, 1978); however, a paucity of studies have applied these tenets to cyberbullying.

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Data Availability: Data are available at https://osf.io/sgwvk/?view_only=7564a87ff3e04b1d9de2eae8e1ee65ea. Footnote 1 has information regarding prior use of the data.

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Self, Parents, and Peers

Who do youth observe to learn how to cyberbully others? Research has shown that both peer (Guo, 2022) and parental (Katz et al., 2019) influences can predict cyberbullying perpetration. Indeed, meta-analytic findings show that parental monitoring (Kowalski et al., 2014), parental mediation (Chen et al., 2017), positive peer attributes (Ran et al., 2023), and having antisocial peers (Guo, 2016) predict cyberbullying; however, no published study that we are aware of has examined the interactive nature of parent and peer cyberbullying perpetration to predict youth cyberbullying. SLT posits that parent and peer cyberbullying will statistically interact, such that the highest amount of cyberbullying by adolescents should be observed when both parent and peer cyberbullying perpetration are high.

The Importance of Reinforcement

Moreover, SLT posits that reinforcement and punishment are both catalysts for the motivation to learn via observation (Bandura & Walters, 1977). In another classic study, Bandura et al. (1963b) randomly assigned children to either watch an aggressive adult be rewarded for their behavior, watch an aggressive adult be punished for their behavior, or a control condition, and results showed higher aggression for the children who viewed the adult being rewarded for their aggression. The Barlett Gentile Cyberbullying Model (Barlett, 2019, 2023a; Barlett & Gentile, 2012)—the only validated theory that predicts cyberbullying perpetration while highlighting the attributes that differentiate cyberbullying from traditional bullying—posits that cyberbullying perpetration is a learned behavior, and, consistent with SLT, positive reinforcement of initial cyberaggressive behaviors aids in the development and automatization of knowledge structures to yield cyberbullying perpetration. A paucity of research has shown that positive reinforcement from others to engage in antisocial online behavior positively correlates with cyberbullying (Barlett & Gentile, 2012); however, no published work has situated cyberbullying reinforcement within SLT to predict cyberbullying perpetration interactively with parent and peer cyberbullying frequency.

Overview of the Current Research

The purpose of the present study was to test SLT tenets on cyberbullying behavior. U.S. adolescents completed measures of self, parent, and peer cyberbullying perpetration and cyberbullying reinforcement. In accordance with theory and past work, we hypothesize that youth cyberbullying perpetration will be predicted by a significant interaction between peer cyberbullying perpetration frequency, parent cyberbullying perpetration frequency, and positive cyberbullying reinforcement (Hypothesis 1). Specifically, cyberbullying perpetration should be highest when parent cyberbullying, peer cyberbullying, and cyberbullying reinforcement are high. Finally, we predict that cyberbullying reinforcement will also mediate the relationship between parent/peer cyberbullying and youth cyberbullying (Hypothesis 2).

Method

Participants and Procedure

Ethical approval was obtained by the author's institutional review board. Data were collected as part of a larger cyberbullying project.[1] Participants were recruited from Qualtrics panel database. We requested Qualtrics to sample youth aged 15–18 years old to complete questionnaires regarding their online behaviors and attitudes. Interested parents completed the online parental consent document, and then their adolescent child completed the online assent document before completing the following questionnaires. Participants were debriefed and then compensated for their time through Qualtrics. The sample consisted of 200 (56.8% male) U.S. adolescents. The average age of the sample was 15.64 ($SD = 0.81$) years of age. The majority were White (71.9%). Finally, most (47.5%) of the sample came from a middle socioeconomic status household. An a priori power analysis was conducted in G*Power (linear multiple regression using a fixed effects model and R^2 deviation from 0) to determine the number of participants needed to achieve .80 power with 10 predictors (three main effects, three two-way interactions, one three-way interaction, and three covariates) using an α of .05. We entered .09 as the effect size (f^2), which is a conservative estimate given the high correlations found between cyberbullying reinforcement and cyberbullying perpetration (Shadmanfaat et al., 2020), and found that 190 participants were needed. In short, our study was adequately powered.

Materials

Demographics

A demographic questionnaire was used to assess participant sex, age, socioeconomic status, and ethnicity.

Parent, Peer, and Self-Cyberbullying

The Cyberbullying Experiences Scale (Doane et al., 2013) was used to measure self-reported cyberbullying perpetration. This is a six-item questionnaire that asks participants to indicate how often in the past year they engaged in several cyberbullying behaviors on a 1 (*never*) to 6 (*everyday/almost everyday*) rating scale. A sample item includes, "Have you sent a rude message to someone electronically/online/on social media?" We adapted the items to ask about whether their peers and parents did the same behaviors using the same rating scale. Items were summed such that higher scores indicated higher cyberbullying. The reliability of self (α = .96), parent (α = .97), and peer (α = .97) was acceptable.

Cyberbullying Reinforcement

Cyberbullying reinforcement was assessed using the Peer Reinforcement subscale of the Differential Reinforcement questionnaire (Shadmanfaat et al., 2020). This is a two-item questionnaire that asks participants to rate their agreement with the items on a 1 (*strongly disagree*) to 5 (*strongly agree*) rating scale. A sample

[1] The same sample was used in Barlett's (in press) study—a study that focused on the interaction between the (a) child's perception of their parents' cyberbullying, (b) child's perception of their peers' cyberbullying, and (c) cyberbullying reinforcement on youth cyberbullying perpetration. The cyberbullying perpetration measure and the parent cyberbullying measure reported here are identical to the ones used in Barlett's (in press) study. Only one correlation in the correlation matrix is shared across both studies: the correlation between cyberbullying perpetration and parent cyberbullying perpetration ($r = .81$). No other findings or results overlap between this study and Barlett (in press).

Table 1
Correlations Between Variables

Variable	1	2	3	4	5	6
1. Cyberbullying	—					
2. Cyberbullying reinforcement	.67**	—				
3. Parent cyberbullying	.81**	.61**	—			
4. Peer cyberbullying	.73**	.54**	.57**	—		
5. Traditional bullying	.85**	.65**	.80**	.65**	—	
6. Participant age	−.04	−.00	−.04	−.09	−.10	—
M	11.66	3.29	9.70	15.74	9.24	15.64
SD	7.45	2.18	7.13	8.71	5.97	0.81
Shapiro–Wilk	.76**	.66**	.58**	.90**	.73**	.74**
Skewness	8.06*	8.86*	11.26*	3.20*	9.42*	5.29*
Kurtosis	2.66*	4.13*	7.79*	−2.53*	5.68*	−0.73

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

item includes, "Posting mean or hurtful comments/films/pictures or spreading rumors about another on social media, like Instagram or Facebook, helps me fit into the group of friends better." Items were summed such that higher scores indicated higher cyberbullying reinforcement. The reliability of this scale (α = .96) was acceptable.

Traditional Bullying

Traditional bullying perpetration was assessed using the Modified Aggression Scale (Bosworth et al., 1999). We modified this scale to change the rating scale and the duration to the past year to be consistent with Doane et al. (2013). This is a five-item questionnaire that asks participants to indicate how frequently they engaged in various bullying behaviors during the past year on a 1 (*never*) to 6 (*everyday/almost everyday*) rating scale. A sample item includes, "I pushed, shoved, slapped, or kicked other students." Items were summed such that higher scores indicated higher traditional bullying perpetration. The reliability of this scale was acceptable (α = .93).

Data Availability

The questionnaires and data are available at https://osf.io/sgwvk/?view_only=7564a87ff3e04b1d9de2eae8e1ee65ea.

Results

Correlations

Table 1 displays the zero-order correlations between the variables of interest.

Sex Differences

Several independent samples *t* tests were conducted to examine sex differences in the variables included in our hypothesized moderation model. Table 2 displays the results and shows that males engaged in traditional bullying more than females, and peers of males cyberbullied more than peers of females. No other differences emerged.

Parent, Peer, Self-Cyberbullying Differences

A repeated measures analysis of variance was conducted to test the main effect of target (parent, peer, and self) ratings of cyberbullying perpetrations. Results showed a significant main effect of target, $F(2, 372) = 96.51$, $p < .001$, $\eta_p^2 = .34$. Pairwise comparisons with a Bonferroni correction revealed that all three targets significantly differed (*p*s < .001) from each other (see Figure 1). Participants rated their peers ($M = 15.85$, $SD = 8.66$) as cyberbullying the most, followed by self ($M = 11.64$, $SD = 7.46$), and then their parents ($M = 9.77$, $SD = 7.23$), who were rated lowest.

Peer and Parent Cyberbullying as a Moderator

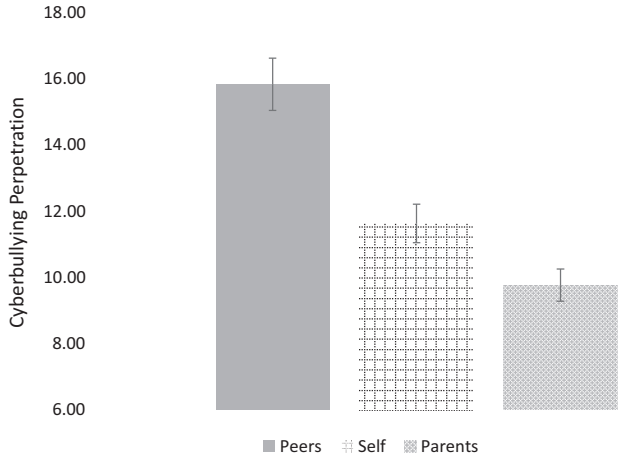
To examine our SLT predictions, PROCESS Model 3 (Hayes, 2013) was used to examine the hypothesized three-way interaction between peer cyberbullying perpetration (predictor), cyberbullying reinforcement (moderator), and parent cyberbullying perpetration (moderator) on adolescent cyberbullying perpetration (outcome).

Table 2
Sex Differences in Variables

	Male			Female			Statistics	
Variable	*M*	*SD*	*n*	*M*	*SD*	*n*	*t*	*d*
Cyberbullying	12.42	8.05	110	10.69	6.61	86	1.62	.23
Cyberbullying reinforcement	3.51	2.36	113	3.01	1.90	85	1.60	.23
Parent cyberbullying	10.11	7.75	110	9.21	6.29	84	0.86	.13
Peer cyberbullying	16.86	9.39	110	14.32	7.60	84	2.02*	.29
Traditional bullying	10.11	6.69	113	8.12	4.64	83	2.32*	.34

* $p < .05$.

Figure 1
Target Differences in Cyberbullying Perpetration



Note. Error bars represent the standard error.

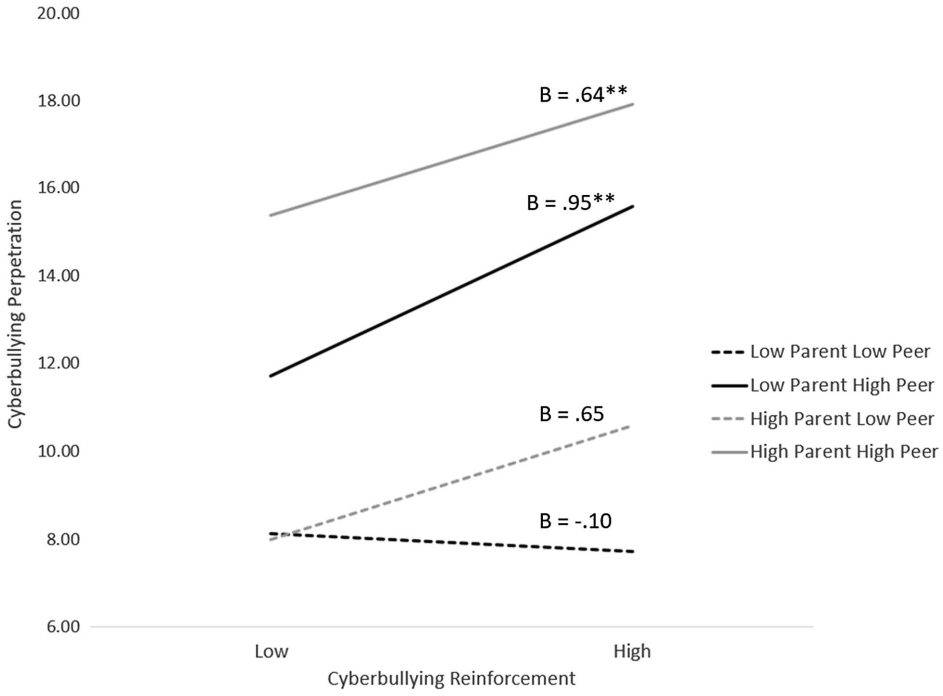
Participant age, participant sex, and traditional bullying perpetration were covariates. Due to the skewed nature of the data (see Table 1), this approach computes unstandardized regression weights with accompanying 95% confidence intervals based on 5,000 bootstrapped samples.

Results showed that the model accounted for a significant proportion of the variance in participant cyberbullying, $R^2 = .85$, $F(10, 168) = 92.85$, $p < .001$. Examination of the effects showed significant main effects of cyberbullying reinforcement, $B = .53$ [.15, .90], $SE = .19$, $t(168) = 2.79$, $p = .006$; parent cyberbullying, $B = .27$ [.10, .44], $SE = .09$, $t(168) = 3.15$, $p = .002$; and peer cyberbullying, $B = .29$ [.20, .37], $SE = .04$, $t(168) = 6.99$, $p < .001$. Traditional bullying was the only significant covariate, $B = .43$ [.28, .58], $SE = .08$, $t(168) = 5.60$, $p < .001$. Consistent with Hypothesis 1, these results were qualified by a significant three-way interaction, $B = -.007$ [−.013, −.001], $SE = .003$, $t(168) = -2.36$, $p = .019$. Subsequent simple slopes analysis showed that the relationship between cyberbullying reinforcement and perpetration was significant, $B = .64$ [.27, 1.00], $SE = .18$, $t(168) = 3.47$, $p = .001$, when parent and peer cyberbullying perpetration were both high, but not when (a) parent and peer cyberbullying were both low, $B = -.10$ [−.70, .49], $SE = .30$, $t(168) = -.34$, $p = .74$, or (b) when peer cyberbullying was low and parent cyberbullying was high, $B = .65$ [−.28, 1.57], $SE = .47$, $t(168) = 1.38$, $p = .17$. Figure 2 displays these effects.

Cyberbullying Reinforcement as a Mediator

To examine the mediating influence of cyberbullying reinforcement, as per SLT, we conducted two simple mediation tests in PROCESS Model 4 (Hayes, 2013) using 5,000 bootstrapped estimates of the unstandardized effects with accompanying 95% confidence intervals to examine the mediating influence of cyberbullying reinforcement in the relationship between (a) peer cyberbullying and adolescent cyberbullying and (b) parent cyberbullying and adolescent cyberbullying. In both models, traditional bullying, participant age, and participant sex were

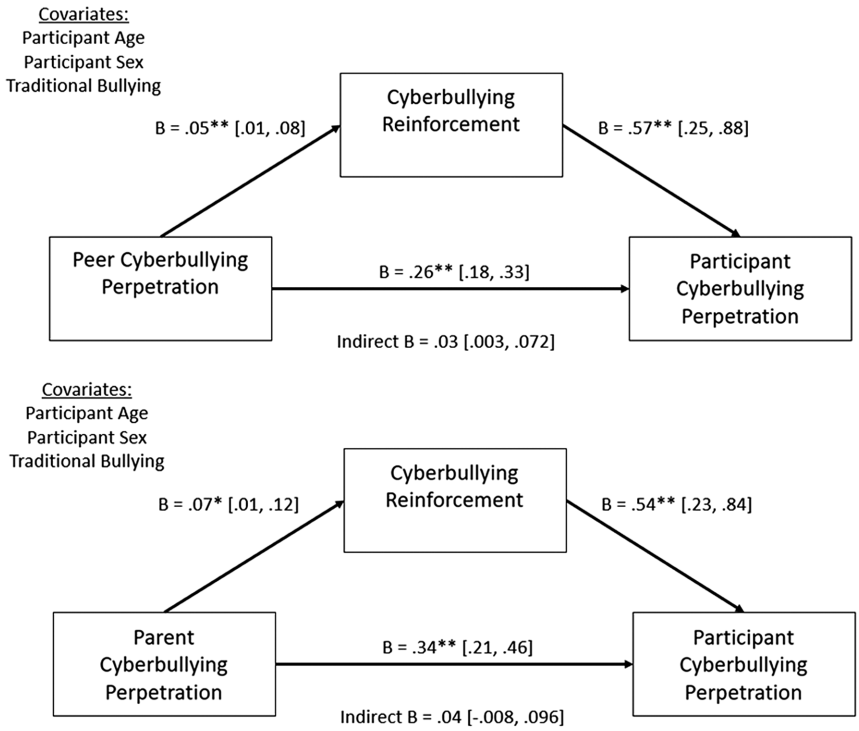
Figure 2
Significant Three-Way Interaction



** $p < .01$.

Figure 3

Mediation Effect of Cyberbullying Reinforcement



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

covariates. Consistent with Hypothesis 2, results showed that peer cyberbullying significantly predicted cyberbullying reinforcement, $B = .05$ [.01, .08], $SE = .02$, $t(178) = 2.77$, $p = .006$, which predicted cyberbullying perpetration, $B = .57$ [.25, .88], $SE = .16$, $t(177) = 3.51$, $p = .001$. The mediating effect was significant (indirect $B = .03$, $SE = .02$, 95% CI [.003, .072]). When parent cyberbullying was the predictor, results showed no mediation (indirect $B = .04$, $SE = .03$, 95% CI [−.008, .096]; see Figure 3).

Discussion

The purpose of the present study was to better understand the social aspects that guide youth cyberbullying perpetration. Applying social learning and cognitive theories (Bandura, 1985, 1989) to cyberbullying, we measured the moderated and mediated relationships between cyberbullying reinforcement and cyberbullying perpetration. We will organize this discussion around the theoretical contributions made to the literature.

First, SLT posits the importance of personality and environmental contexts for predicting antisocial behaviors, such as aggression (Bandura, 1978). To our knowledge, this is the first published study to test the interactive role of personality (cyberbullying reinforcement) and youth's social environment (parent and peer cyberbullying frequencies) to predict cyberbullying. Indeed, while several studies focus on peer attachment (Wright et al., 2015) or parental monitoring (Meter & Bauman, 2018), our study assessed adolescent participants' perceptions of their parents and peer cyberbullying perpetration. Results from our analysis showed that parent cyberbullying, peer cyberbullying, the participant's cyberbullying, and cyberbullying reinforcement were all highly correlated, which was expected because (a) all these variables assess some aspect of cyberbullying (reinforcement or perpetration) that are likely correlated in the real world, (b) are all assessed from the same participant, and (c) share common items, but the target (self, parent, or peer) changes.

More importantly, youth cyberbullying perpetration was the highest when peer cyberbullying, parent cyberbullying, and cyberbullying reinforcement were all high, whereas youth cyberbullying was the lowest when peer and parent cyberbullying perpetration were also low—regardless of cyberbullying reinforcement levels. Our moderation test results support SLT. Indeed, when an individual observes (or perceives) their parent cyberbullying others and their peers cyberbullying others, then SLT posits that youth may learn that cyberbullying is an acceptable behavior and subsequently perpetrate online harm.

Second, Figures 1 and 2 and Table 1 show that peer cyberbullying is not only more prevalent than adult cyberbullying, but peers' engagement in cyberbullying is more important than parents' engagement. Indeed, Figure 2 shows that the steepest slopes in cyberbullying occur when peer cyberbullying is high; however, when peer cyberbullying is low but parent cyberbullying is high, the slope of the line is not significant. This result may seem intuitive for several reasons. First, research has shown that the peer group supplants parents for importance during adolescence (Wang et al., 2007). Second, cyberbullying perpetration has been linked to social status and popularity (Wegge et al., 2016), which is more closely aligned with peers than parents. Third, although speculative, it is

more likely that youth have a better estimate of their peers' cyberbullying behavior than their parents'. We want to clearly state that the literature shows that individuals in early to middle adulthood do cyberbully others (Barlett & Chamberlin, 2017)—suggesting that it is more likely that youth are less aware of their parents' cyberbullying behavior than their parents simply not engaging in cyberbullying.

Finally, our results suggest that cyberbullying reinforcement is an important predictor of cyberbullying perpetration in adolescents. SLT (Bandura, 1985) and specific cyberbullying theories (e.g., Barlett & Gentile, 2012) posit that cyberbullying reinforcement is crucial for the development of subsequent cyberbullying behavior. Indeed, not only was cyberbullying reinforcement strongly correlated with youth cyberbullying frequency, but this variable was also a mediator in the relationship between peer, but not parent, cyberbullying frequency and youth cyberbullying. This suggests that the reason why peer cyberbullying predicted youth cyberbullying was due to an increase in cyberbullying reinforcement.

Limitations and Future Directions

Like all psychological research, there are few limitations that necessitate future work. First, the study was limited by the correlational nature of the data. This limitation is especially important when temporally assigning youth cyberbullying as the outcome. Future research should attempt to replicate our findings using a longitudinal design. Second, the findings cannot generalize outside of the population of U.S. adolescents. Research has shown variability in cyberbullying across age groups (Barlett & Chamberlin, 2017), culture (Barlett et al., 2014), and ethnicities (Kowalski et al., 2020). Future work should attempt to replicate our study while sampling a more diverse sample of youth. Third, several variables important to social learning and cognitive theories were not assessed in the present study, such as punishment (Bandura & Walters, 1977), agency (Bandura, 1989), and learning from other sources besides peers and parents (i.e., media; Deaton, 2015). Future work should assess these important variables.

Overall, predicting cyberbullying perpetration is important for our understanding of this antisocial online behavior to adapt or create interventions aimed at reducing cyberbullying. The results of our study are the first to highlight the need for these interventions to target not only youth but also their parents and peers. For example, there is a lot of high-quality research showing the efficacy of peer cyber-bystander intervention programs to reduce cyberbullying (e.g., Torgal et al., 2023) that can be conceptualized as a peer cyberbullying punishment in SLT. Although more work is needed to further examine social learning and cognitive theories as applied to cyberbullying, we believe that this is an important first step.

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