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Perceived Social Norms in the Neighborhood Context: The Role of Perceived Collective Efficacy in Moderating the Relation Between Perceived Injunctive Norms and Use of Corporal Punishment

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Abstract
Social norms regarding corporal punishment (CP) may be the most important population-level risk factor for child physical abuse in the U.S. Little is known about the perceived social contexts, such as perceived norms and collective efficacy, that are linked with CP. In particular, there is a paucity of research exploring the direct and/or moderating roles of collective efficacy in reducing CP as a risk factor for child physical abuse. The current study examined the linkages between perceived neighborhood levels of both parenting collective efficacy and injunctive norms regarding CP use with maternal attitudes toward and use of CP. Data were utilized from a survey conducted with female primary caregivers (N = 436) enrolled in Special Supplemental Nutrition Program for Women, Infants and Children clinics in the Greater New Orleans Area. Perceived collective efficacy was not significantly associated with attitudes toward CP, and had only a marginally significant positive association with CP use (χ^2 (2, N = 436) = 8.88, p = 0.06). Further, perceived injunctive norms (i.e., perceived higher levels of approval) of CP use by neighbors were positively associated with positive attitudes toward CP use (AOR: 6.43; 95% CI 4.00, 10.33) and greater frequency of CP use (AOR: 2.57; 95% CI 1.62, 4.09). There was evidence of effect modification by perceived collective-efficacy on the relation between injunctive norms of neighbors and frequency of CP use (p = 0.082). For those who reported high perceived collective efficacy, there was a significant association between positive perceived injunctive norms and frequency of CP use (AOR: 3.24; 95% CI 1.51, 6.95); this suggests that perceived collective efficacy does not buffer risk for CP use when parents perceive that neighbors approve of its use. Targeted efforts for larger communities to shift beliefs and attitudes regarding CP use may be valuable not only in shifting community norms supportive of CP but also in building supportive community networks that discourage parents from using CP and encourage them to practice non-harsh parenting strategies.

Keywords Primary prevention · Corporal punishment · Social norms · Collective efficacy

Research on corporal punishment (CP) use by parents has demonstrated several key findings that indicate its relevance as a public health issue. The definition of CP, also frequently called spanking or physical discipline, is "the use of physical force with the intention of causing pain but not injury, for the purpose of correction or control of the child's behavior" (Donnelly & Straus, 2005, p. 3). First, use of CP is strong risk factor for child physical abuse (Gershoff & Grogan-Kaylor, 2016; Herzberger, Potts, & Dillon, 1981; Kadushin & Martin, 1981; Lee, Grogan-Kaylor, & Berger, 2014; Trocmé & Durrant, 2003; Zolotor, Theodore, Chang, Berkoff, & Runyan, 2008). Children who have experienced CP are approximately three times more likely to experience physical abuse and about nine time more likely to experience physical abuse if an object was used for CP (Zolotor et al., 2008). Additionally, use of CP places children at risk for a range of physical, social, and behavioral health problems, including many of the problems linked directly to child maltreatment (Afifi et al., 2017; Afifi, Mota, MacMillan, & Sareen, 2013; Alampay et al., 2017; Berlin et al., 2009; Douglas & Straus, 2006; Gershoff & Grogan-Kaylor, 2016; Gershoff, Sattler, & Ansari, 2018; Grogan-Kaylor, 2005; Hussey, Chang, & Kotch, 2006; Lee, Taylor, Altschul, &

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Rice, 2013; Taillieu & Brownridge, 2013; Taylor, Manganello, Lee, & Rice, 2010; Temple et al., 2018). Detrimental outcomes associated with CP during childhood such as mental health problems and increased aggressive and antisocial behavior continue to be associated with CP into adulthood (Gershoff & Grogan-Kaylor, 2016). Further, many longitudinal studies have also demonstrated that CP raises the risk for subsequent increased aggression and antisocial behavior in childhood and adolescence (Berlin et al., 2009; Grogan-Kaylor, 2005; Lansford et al., 2014; Lee et al., 2013; MacKenzie, Nicklas, Waldfogel, & Brooks-Gunn, 2013; Taylor et al., 2010).

Although there is a strong case for the negative impact of CP on children and adults, there is still significant approval for CP use in the U.S. Approximately 71% of adults agree that CP use is sometimes necessary for child discipline (Child Trends Data Bank, 2015). The highest prevalence estimates for CP are among children between the ages of 3 and 5, Black families, conservative Protestants, families in the South, and families where the mother spends the most time with the child as a caregiver (Berlin et al., 2009; Ellison, Bartkowski, & Segal, 1996; Giles-Sims, Straus, & Sugarman, 1995; Grogan-Kaylor & Otis, 2007; Mackenzie, Nicklas, Waldfogel, & Brooks-Gunn, 2012; Regalado, Sareen, Inkelas, Wissow, & Halfon, 2004; Slade & Wissow, 2004; Straus, 2010; Straus & Stewart, 1999; Wissow, 2001; Zolotor et al., 2008).

Neighborhood Social Influences on Corporal Punishment Use

There is increasing evidence of the influence of neighborhood factors on child development and wellbeing (Earls & Carlson, 2001; Leventhal & Brooks-Gunn, 2000, 2003; Sampson, Morenoff, & Gannon-Rowley, 2002). This has encouraged more in-depth study of the effects of neighborhood characteristics and perceived social processes on parenting behavior and rates of child maltreatment. Although prior literature connecting neighborhood factors and child maltreatment has focused on increased risk, there may be protective or buffering processes (Coulton, Crampton, Irwin, Spilsbury, & Korbin, 2007). Investigating these processes and beliefs, and their connection with risk for child abuse, may provide important insight into areas to target for prevention.

Prevalent perceptions of community level risk factors for child maltreatment, including social norms regarding CP use, and protective processes, such as community cohesion, are neglected targets in primary prevention strategies (Klevens & Whitaker, 2007). The Theory of Planned Behavior posits that attitudes toward and use of certain behaviors are influenced by attitudes toward the behavior, perceived norms, and perceived behavioral control (Ajzen, 1988, 1991). Specifically, perceived injunctive norms, defined as perceptions within one's referent groups of approval or disapproval of a particular behavior, play an important role in influencing attitudes and behaviors (Ajzen, 1991; Cialdini & Trost, 1998; Fishbein & Yzer, 2003). Perceived injunctive norms may play a role in shaping attitudes and health behaviors when an individual has motivation to comply with perceived approval or disapproval of a behavior (Cialdini, Kallgren, & Reno, 1991; Kallgren, Reno, & Cialdini, 2000). For example, perceived injunctive norms regarding substance abuse (Borsari & Carey, 2001; Collins & Carey, 2007; Elek, Miller-Day, & Hecht, 2006; Hagger et al., 2012; McMillan & Conner, 2003; Neighbors et al., 2008; Park, Klein, Smith, & Martell, 2009), speeding (Cestac, Paran, & Delhomme, 2011; De Pelsmacker & Janssens, 2007; Stead, Tagg, MacKintosh, & Eadie, 2005), and sexual practices (Armitage & Talibudeen, 2010; Boldero, Sanitioso, & Brain, 1999; Schaalma, Kok, & Peters, 1993), all play a role in predicting intentions and use of these behaviors. With regard to CP as a risk factor for child physical abuse, perceived injunctive norms, specifically perceived approval of CP use by family, friends, and professionals, are strongly associated with having a positive attitude toward CP use and may play an important role in parental CP use (Taylor, Hamvas, Rice, Newman, & DeJong, 2011). As there is increasing evidence of the influence of neighbors and neighborhoods on parenting and child wellbeing (Coulton et al., 2007; Earls & Carlson, 2001; Leventhal & Brooks-Gunn, 2000, 2003), perceived approval of CP use by neighbors might also be a factor influencing parental CP use.

Perceived neighborhood collective efficacy regarding parenting might also influence parenting behavior; particularly given that collective efficacy, defined as social cohesion (i.e., norms of reciprocity, and trust in others) and control (i.e., willingness to intervene on behalf of the common good), may promote resilience in families and children (Leventhal & Brooks-Gunn, 2003; Putnam, 2001). In particular, collective efficacy has been shown to reduce risk of delinquency, violence and crime (Browning, 2002; Browning, Dietz, & Feinberg, 2004; Maimon, Browning, & Brooks-Gunn, 2010; Sampson, Raudenbush, & Earls, 1997; Simons, Simons, Burt, Brody, & Cutrona, 2005), and it may even lower risk for child maltreatment (Andresen & Telleen, 1992; Armstrong, Birnie-Lefcovitch, & Ungar, 2005; Leventhal & Brooks-Gunn, 2003). Specifically, neighborhood cohesion and the quality of social relationships that exist between community members have been found to help build parenting support and functions, such as more positive parent–child interaction and supervision, and also to reduce stress, which is associated with maltreatment (Andresen & Telleen, 1992; Armstrong et al., 2005; Leventhal & Brooks-Gunn, 2003; Putnam, 2001; Sampson et al., 1997).

Despite the suggested importance of neighborhood collective efficacy in reducing risk for child maltreatment, its associations with CP use or perceived norms regarding CP use have not been examined. Additionally, collective efficacy typically has been measured in general terms of community cohesion and control, without reference to parental cohesion and control specific to raising and disciplining a child. Parents who perceive a strong sense of support and trust amongst their neighbors in raising children may experience less parenting stress and be less likely to use harsh or punitive parenting practices such as CP. However, perceived collective efficacy may also actually reinforce perceived neighborhood injunctive norms regarding CP use. For example, if parents perceive neighborhood norms that are highly supportive of CP use, a high level of perceived neighborhood collective efficacy regarding parenting could actually reinforce more positive parental attitudes toward CP use.

The current study aims to answer the following research questions within a sample of female primary caregivers of young children: (1) are perceived neighborhood injunctive norms regarding CP use associated with attitudes toward and frequency of CP use? (2) is perceived neighborhood parenting-specific collective efficacy associated with attitudes toward and frequency of CP use? and (3) does perceived neighborhood parenting-specific collective efficacy modify the association between perceived neighborhood injunctive norms and attitudes toward and frequency of CP use? Findings could provide a new understanding of important factors to target in child physical abuse prevention efforts, including how to effectively build community for parents and design neighborhood interventions that promote positive community cohesion and reduce risk for child physical abuse.

Methods

Study Sample

Participants (N = 436) for the current study were recruited as part of the *Tulane University Innovations in Positive Parenting Study (TIPPS)* study. Recruitment took place in Special Supplemental Nutrition Program for Women, Infants and Children (WIC) clinics located in the Greater New Orleans Area. WIC provides services and vouchers to supplement nutrition for women that are pregnant, breastfeeding or recently pregnant, as well as infants and children up to the age of 5. WIC participants must meet a state residency requirement, income guidelines (< 185% federal poverty level), and be determined to be at "nutritional risk." Additional eligibility requirements for study participants included: (1) 18 years of age or older, (2) English-speaking, (3) the primary female caregiver to at least one child between the ages of 2 and 7 years old, and (4) return to WIC 3 months later for follow-up visit. The majority of participants (97%) were biological mothers to the index child, and will be referred to as such throughout the paper.

Study Procedures

Data collection for these cross-sectional data took place from November 2014 to May 2017. All activities related to the study were approved by the Tulane University Social-Behavioral Institutional Review Board. Recruitment of participants took place in the waiting rooms of four Greater New Orleans area WIC clinics. A TIPPS staff member provided potential participants with a brief description of the study, and then assessed eligibility to participate. If an individual was eligible, the TIPPS staff member took her through the informed consent process including providing a copy of the informed consent form and reviewing the consent form fully. The participant signed the consent form if she agreed to participate in the study. Study staff conducted interviews with participants to ask survey questions, and responses were entered by the interviewer into REDCap, a secure data collection web application. Participants received a $25 Walmart gift card as compensation for their time. Interviews took approximately 45 min. Data were collected regarding several constructs: (1) parental attitudes and use of CP, (2) neighborhood collective efficacy specific to parenting, and (3) neighborhood injunctive norms about CP. In order to answer questions regarding use of CP, participants identified their child between the ages of 2 and 7 with the most challenging behavior. The parent interview also included a variety of demographic information about the family.

Measures

Main Variables of Interest

Frequency of CP use was assessed with one item: "How often in the past month have you spanked your child?" Participants selected from the following answer choices: (0) *never*, (1) *once or twice in the past month*, (2) *about once a week*, (3) *about twice a week*, (4) *about once every other day*, (5) *about once a day*, and (6) *more than once a day*. An ordinal variable was created and participants were categorized as (0) if the caregiver reported *never* for this item, (1) if she reported *1–2 times in the past month*, and (2) for *more than 2 times in the past month*.

Attitudes toward CP (current study $\alpha = 0.82$). The ATS questionnaire assesses parents' personal attitudes and beliefs about use of CP (Holden, 2001). An adapted version of the measure, providing questions instead of statements was used. Four items use a 7-point Likert scale with a higher score indicating more approval. These items include: "How

often on average in the past month has spanking been the only way you got your child to behave?", "How effective do you think spanking is for changing your child's behavior in the long run?", "How necessary do you think spanking is as a tool for teaching proper moral and social conduct to your child?", "How would you rate spanking as a disciplinary technique overall?" One of these items is reverse-scored and was therefore recoded to match the other two items. One item ("How harmful do you think spanking is for your child?") is on a 5-point Likert scale with a higher score indicating more approval. A continuous summary score was created from the 5 items, with a higher score indicating more approval for CP. The variable as a continuous measure was skewed and recoded as categorical variable using a quartile split. Participants were assigned one of the following scores: (0) very negative attitudes toward CP, (1) negative attitudes toward CP, (2) moderate attitudes toward CP, and (3) positive attitudes toward CP.

Parenting-specific collective efficacy (current study $\alpha = 0.90$) was captured using an adapted version of a widely established and validated 10-item measure with 4-item Likert scales to look specifically at parenting with items capturing social cohesion (e.g., "People in the neighborhood share the same values about parenting", etc.) and social control (e.g., "How likely is it that neighbors would intervene if children were skipping out and hanging out on the street?", etc.) (Sampson & Morenoff, 2004). The measure was adapted to ask specifically about perceived neighborhood social cohesion and control related to parenting and children. This variable was also examined as a potential moderator. For perceived neighborhood measures, neighbors were defined for participants as "the people living in the area surrounding your home." A mean score was calculated ranging from (0) *very unlikely* to (3) *very likely*. The variable was collapsed into three categories based on tertiles: (0) low collective efficacy for scores between 0 and 1.79, (1) moderate collective efficacy for scores between 1.80 and 2.49, and (2) high collective efficacy for scores between 2.50 and 3. The variable was also assessed as a four-category ordinal variable, but results were the same and therefore left at three categories.

Neighborhood injunctive norms (current study $\alpha = 0.80$) was also assessed on the caregiver survey. As perceived norms of neighbors were of specific interest for this study, parents were asked: "Now I would like you to think about your neighbors. Your neighbors are the people living in the area surrounding your home. Do you think that this person would *strongly agree, agree, neither agree or disagree, disagree or strongly disagree* with each of the following statements about spanking?" Four items from the attitudes toward spanking (ATS) questionnaire (Holden, 2001) were used to ask about spanking in general ("Sometimes the only way to get my child to behave is with a spank," "When all is said and done, spanking is harmful for children," and "Overall, I believe spanking is a bad disciplinary technique"). In a sample of New Orleans parents ($N = 500$), this version of the ATS demonstrated good reliability ($\alpha = 0.79$) (Taylor et al., 2011). A mean score for these items was calculated, with two items being reverse scored. Higher scores indicated perceived norms that were more supportive of CP. As a continuous variable, this measure was highly skewed. Therefore, it was collapsed into a categorical variable: (0) negative injunctive norms toward CP for scores between 1 and 2.99, (1) moderate injunctive norms toward CP for scores between 3 and 3.49, and (2) positive injunctive norms toward CP for scores between 3.5 and 5.

Sociodemographic characteristics of the participants were assessed as potential confounders or moderators including: family race/ethnicity, primary caregiver age, level of education, status of relationship with child's father, religion, alcohol consumption, monthly income, and child's age and gender. These characteristics are associated with use of CP (Berlin et al., 2009; Biernat & Wortman, 1991; Day, Peterson, & McCracken, 1998; Dietz, 2000; Ellison et al., 1996; Giles-Sims et al., 1995; Grogan-Kaylor & Otis, 2007; Gunnoe & Mariner, 1997; Jackson et al., 1999; Mackenzie et al., 2012; Muller, Hunter, & Stollak, 1995; Regalado et al., 2004; Simons & Wurtele, 2010; Slade & Wissow, 2004; Smith & Brooks-Gunn, 1997; Straus, 1994, 2010; Straus & Stewart, 1999; Taillieu, Afifi, Mota, Keyes, & Sareen, 2014; Wissow, 2001; Xu, Tung, & Dunaway, 2000; Zolotor, Theodore, Runyan, Chang, & Laskey, 2011).

Exposure to parenting interventions (EPI). Participants were asked about their involvement in other parenting interventions such as Nurse Family Partnership and Healthy Start. EPI was assessed as a potential confounder.

Several forms of family violence found to be associated with CP were assessed as potential confounders. Intimate partner violence (IPV) was assessed with the HITS screening tool (Sherin, Sinacore, Li, Zitter, & Shakil, 1998). Items on the questionnaire (How often does your current or most recent partner: (1) physically hurt you? (2) insult or talk down to you? (3) threaten you with harm? (4) scream or curse at you? were measured on a 5-point Likert scale from (1) *never* to (5) *frequently*. This measure was included because the presence of IPV strongly increases odds of CP (Taylor, Guterman, Lee, & Rathouz, 2009). A summary score between 4 and 20 was calculated. The continuous variable was skewed, and both ordinal and binary variables were tested with no difference in results. Therefore, binary variable with (0) no exposure to IPV and (1) exposure to IPV was used. Childhood history of experiencing physical aggression by a caregiver was measured with the following questions: "While you were growing up, that is, during your first 18 years of life, how often did a parent, step-parent or other adult living in your home: (1) push, grab, shove, slap you, or throw something at you? (2) Spank you?" Each item

was measured on a 3-point scale from *never* (0) to *often* (2). This latter measure is highly linearly correlated with positive ATS as measured by the ATS (Taylor et al., 2011). A binary variable was created for (0) no childhood exposure to physical aggression and (1) childhood exposure to physical aggression. Neighborhood violence was assessed with 4 yes-no items. Participants were asked: "During the last 6 months in your neighborhood, have you heard of, witnessed, or experienced: (1) a mugging? (2) a fight? (3) a sexual assault? (4) a murder?" Responses were compiled for a summary score, and then a binary (0) no neighborhood exposure to violence and (1) exposure to neighborhood violence variable was created.

Maternal mental health was tested as a potential confounder as it is associated with higher rates of CP (Chung, McCollum, Elo, Lee, & Culhane, 2004; Eamon & Zuehl, 2001; Kavanaugh et al., 2006). The Brief Symptom Inventory (BSI) (Morlan & Tan, 1998) was used to measure maternal mental health. The BSI is a brief self-report checklist and measures nine different psychological symptoms including: somatization, obsessive-compulsiveness, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. BSI consists of 17 questions measured on a 5-point scale from (1) *not at all* to (5) *extremely*. BSI has high internal consistency ($\alpha = 0.75–0.89$), test–retest and other forms of reliability, as well as very good convergent validity (Morlan & Tan, 1998).

Data Analysis

Univariate, bivariate, and multivariate analyses were conducted. All analyses were performed using SAS version 9.4. Standard errors, 95% confidence intervals and unless otherwise stated, a p value < 0.05 were used to define statistically significant associations. The two main dependent variables, including attitudes toward CP and use of CP, were assessed as ordinal categorical variables. Assumptions of normality were not met for these variables, and no appropriate transformation to normality was found. Therefore, nonlinear versus linear methods were employed to test the associations. Descriptive, univariate analyses for all variables included frequency distributions, means, and standard deviations. Bivariate analyses including Chi square and correlation analyses were used to test all crude associations between the exposure, moderator outcome, and confounding variables. No covariates were significant. However, exposure to physical aggression in childhood, IPV history, exposure to neighborhood violence, religion, race, and maternal age were kept in the fully adjusted models due to support from past research the association between these factors with attitudes toward and use of CP.

Multivariate analyses encompassed ordered logistic regression models to test the association between neighborhood injunctive norms and attitudes toward CP and frequency of CP use, adjusting for covariates and including effect modification. Further, all covariates with regression coefficients that change by more than 10% in the multiple regression model compared to a simple regression model, were considered a confounder. To test between parenting-specific collective efficacy as a moderator, an interaction term was introduced into regression analyses to test the interaction between parenting-specific collective efficacy and neighborhood injunctive norms. During initial analysis, propensity score matching was also tested to ensure that exposed and unexposed groups did not differ by important demographic characteristics. Overlap of propensity scores was assessed and then children were matched 2:1 by injunctive norms, as there was a higher number of participants exposed to Injunctive norms supportive of CP use, with a caliper width of 0.05 of the pooled standard deviation of the logit of the propensity score.

Results

Study participant demographic characteristics are shown in Table 1. Most participants identified as Black (83.7%) and Baptist (54.3%). The majority had completed at least some college (53.0%) and made less than $20,000 annually (59.8%). Over half of respondents were exposed to physical aggression in childhood (60.7%) and had not been exposed to IPV (61.0%). The mean caregiver age was 31.1 (SD: 8.4) and the mean BSI score was 1.4 (SD: 0.6). More than half of respondents had positive or very positive attitudes toward CP (51.19%), and used CP at least one to two times a month with their child in the past month (66.67%).

Our examination of perceived neighborhood injunctive norms showed that more participants who perceived high approval of CP by neighbors had positive attitudes toward CP (74.0%) compared to those who perceived moderate or low approval of CP from neighbors (26.0%). More participants who perceived high approval of CP from neighbors also reported frequent use of CP their children, with the majority reporting more than twice per month (52.9%), compared to participants who perceived low approval of CP from neighbors (21.0%). Further, the majority of participants reported moderate or high parenting-specific collective efficacy (68.6%). However, parenting-specific collective efficacy was not significantly associated with attitudes toward CP, and only marginally significant with frequency of CP use (χ^2 (2, $N = 436$) $= 8.88$, $p = 0.06$). Those who perceived low parenting-specific collective efficacy were more likely to use CP more frequently. Of the participants who reported using CP more than twice per month with their children, most (68.8%) were Baptists and the rest were not (31.2%) ($p < 0.05$). More frequent CP use was also significantly

Table 1 Characteristics of sample by attitudes toward and frequency of corporal punishment (CP) (n = 436)

Characteristic	Total N (%)
Neighborhood injunctive norms***	
Negative	
Moderate	113 (26.9)
Positive	116 (27.6)
Parent-specific collective efficacy+	191 (45.5)
Low	137 (31.4)
Moderate	149 (34.2)
High	150 (34.4)
Maternal race	
Black	365 (83.7)
Non-Black	71 (16.3)
Maternal education level	
Less than high school	64 (14.7)
Completed high school or GED	141 (32.3)
Some college	181 (41.5)
Completed college or graduate degree	50 (11.5)
Religion	
Baptist	236 (54.3)
Other	199 (45.8)
Exposure to physical aggression in childhood	
Yes	262 (60.7)
No	170 (39.4)
Exposure to IPV	
Yes	170 (39.0)
No	266 (61.0)
Exposed to other parenting interventions	
Yes	170 (39.0)
No	266 (61.0)

	Mean	Standard deviation	Range
Child age	3.7	1.6	2–7
Caregiver age	31.1	8.4	19–73
Brief Symptom Inventory	1.4	0.6	1–4.5

+p < 0.10; *p < 0.05; ***p < 0.001, based on likelihood ratio Chi square test

associated with exposure to IPV with the most recent intimate partner (p < 0.05).

Regression results are displayed in Table 2. Results between matched models and non-matched models did not differ in propensity score matching, and therefore models without matching were used. There were still significant associations in the fully adjusted models. As shown in Model 2, participants with perceived moderate support for CP by neighbors were 2.14 times more likely to have positive attitudes toward CP compared to those with perceived negative norms of CP by neighbors (OR = 2.14; 95% CI 1.33, 3.45). Participants with positive, or perceived high support for CP by neighbors, *neighborhood injunctive norms* were 6.43 times more likely to have positive attitudes toward CP compared to those with perceived negative norms of CP by neighbors (OR = 6.43; 95% CI 4.00, 10.33). Additionally, high perceived levels of approval of CP by neighbors remained positively associated with frequency of CP in the fully adjusted model (Model 4) (OR = 2.57; 95% CI 1.62, 4.09). Mothers with perceived high levels of approval of CP were more likely to use CP more frequently. No other covariates were significant in the model, but exposure to physical aggression in childhood, IPV history, exposure to neighborhood violence, religion, race, and maternal age were kept in for the fully adjusted model because of support from past literature for the association of these factors with attitudes toward and use of CP, as listed in the "Measures" section.

Table 2 Attitudes toward CP and frequency of CP use regressed on perceived neighborhood injunctive norms regarding CP use (N = 420)

	Attitudes toward CP		Frequency of CP	
	Model 1 (n = 420) OR (95%CI)	Model 2 (n = 413) OR (95% CI)	Model 3 (n = 420) OR (95%CI)	Model 4 (n = 389) OR (95% CI)
Neighborhood injunctive norms (ref = negative)				
Moderate	1.98 (1.24, 3.16)**	2.14 (1.33, 3.45)**	1.69 (1.03, 2.76)*	1.60 (0.97.2.65)
Positive	5.99 (3.18, 9.40)***	6.43 (4.00, 10.33)***	2.77 (1.76, 4.34)***	2.57 (1.62, 4.09)***
Exposure to physical aggression in childhood (ref = no)		0.95 (0.64, 1.41)		1.05 (0.70, 1.56)
IPV history (ref = no)		1.31 (0.88, 1.93)		1.38 (0.93, 2.05)
Neighborhood violence (ref = no)		0.80 (0.55, 1.16)		1.06 (0.72, 1.54)
Race (ref = Black)		0.84 (0.50, 1.38)		0.94 (0.55, 1.61)
Religion (ref = Baptist)		0.73 (0.51, 1.06)		0.73 (0.50, 1.07)
Maternal age (ref = 19–24 YO)				
25–28 YO		1.43 (0.82, 2.48)		0.90 (0.51, 1.57)
29–33 YO		0.68 (0.40, 1.17)		0.61 (0.35, 1.06)
34 + YO		0.95 (0.56, 1.62)		0.51 (0.30, 0.89)*

Sample n is less than (N = 436) due to missing values

*p < 0.05; **p < 0.01; ***p < 0.001

Descriptive results for the percentages of neighborhood injunctive norms by level of collective efficacy are shown in Fig. 1. Nearly half of those with low parenting-specific collective efficacy reported low (46.90%) perceived approval CP from neighbors. For participants with high parenting-specific collective efficacy, there was very little variation in perceived neighborhood injunctive norms (range 31.9–46.9%).

As shown in Table 3, there was no evidence of effect modification by parenting-specific collective efficacy on the relation between neighborhood injunctive norms and attitudes toward CP (p = 0.237). However, there was evidence of effect modification by parenting-specific collective efficacy on the relation between neighborhood injunctive norms and frequency of CP use (p = 0.082). Therefore, models were stratified by level of collective efficacy, as shown in Table 3. For participants that reported low parenting-specific collective efficacy, those that reported a perception of high approval for CP by neighbors were 3.18 times more likely to use CP more frequently compared to those that reported a perception of low approval of CP by neighbors (OR = 3.18; 95% CI 1.15, 8.76). For those with high parenting-specific

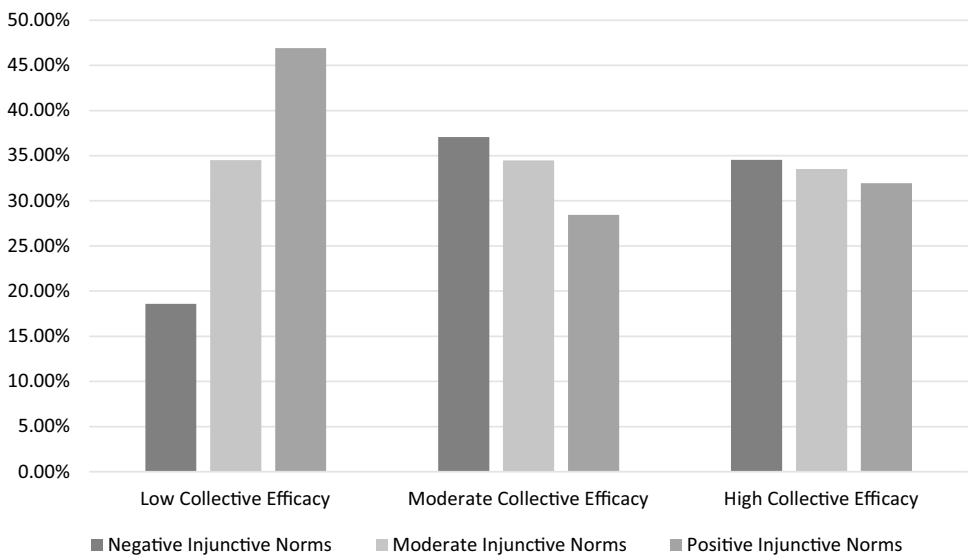

Fig. 1 Frequency of neighborhood injunctive norms by level of collective efficacy

Table 3 Stratified models for association between neighborhood injunctive norms and frequency of CP by level of parenting-specific collective efficacy (N = 420)

	Low collective efficacy (n = 128) OR (95%CI)	Moderate collective efficacy (n = 140) OR (95% CI)	High collective efficacy (n = 145) OR (95%CI)
Neighborhood injunctive norms (ref = negative)			
Moderate	1.92 (0.68, 5.43)	1.55 (0.63, 3.82)	0.90 (1.03, 2.76)
Positive	3.18 (1.15, 8.76)*	1.63 (0.72, 3.71)	3.24 (1.51, 6.95)**
Exposure to physical aggression in childhood (ref = no)	1.26 (0.54, 2.96)	1.31 (0.67, 2.58)	0.79 (0.40, 1.56)
IPV history (ref = no)	1.17 (0.57, 2.42)	1.89 (0.97, 3.69)	0.98 (0.47, 2.04)
Neighborhood violence (ref = no)	1.19 (0.58, 2.48)	0.87 (0.45, 1.70)	0.95 (0.48, 1.89)
Race (ref = Black)	0.49 (0.18, 1.32)	0.83 (0.30, 2.24)	1.93 (0.79, 4.72)
Religion (ref = Baptist)	0.62 (0.31, 1.26)	0.70 (0.36, 1.38)	0.58 (0.29, 1.14)
Maternal age (ref = 19–24 YO)			
25–28 YO	0.86 (0.32, 2.30)	1.12 (0.38, 3.33)	0.91 (0.35, 2.39)
29–33 YO	0.46 (0.18, 1.18)	1.61 (0.53, 4.92)	0.29 (0.11, 0.77)*
34 + YO	0.37 (0.12, 0.97)*	0.87 (0.30, 2.54)	0.42 (0.16, 1.12)

Sample n is less than (N = 436) due to missing values

*p < 0.05; **p < 0.01; ***p < 0.001

collective efficacy group, those that reported a perception of high approval for CP by neighbors were 3.24 times more likely to use CP more frequently compared to those that reported a perception of low approval of CP by neighbors (OR = 3.24; 95% CI 1.51, 6.95).

Discussion

This study provides a broader understanding of the association between perceived injunctive norms, collective efficacy, and CP use as a risk factor for child physical abuse. As hypothesized for the first research question, female caregivers perceived injunctive norms toward CP use of neighbors demonstrated a strong, positive association with both maternal attitudes toward and use of CP. These findings indicate the potential influence that neighbors may have on parents in developing more support toward and greater use of CP. This finding is in line with past research demonstrating a link between parental injunctive norms toward CP and parental attitudes toward and use of CP (Taylor et al., 2011). However, past research specifically looked at parental injunctive norms of family members, religious leaders, and professionals. This study expands on knowledge of such norms and CP use by examining perceptions of neighbors. If parents perceive that their neighbors approve of CP use as a child discipline strategy, then they may be more likely to approve of and use CP. The high perceived approval of CP of neighbors is not unexpected given the high level of approval for CP overall in the U.S. (Child Trends Data Bank, 2015). Therefore, it may be particularly important to focus on shifting norms toward CP on a larger community level and not just to target parents directly. This is even more important given that social norms regarding CP are an extremely widespread population-level risk factor for child physical abuse in the U.S. (Klevens & Whitaker, 2007). Norms changing interventions have been effective in changing behavior by focusing not only on shifting perceived injunctive norms, but also in shifting descriptive norms that characterize the prevalence of a behavior (Chan, Neighbors, Gilson, Larimer, & Marlatt, 2007; Linkenbach & Perkins, 2003; Sandstrom, Makover, & Bartini, 2013). If targeted efforts can be made to shift community norms to more strongly disapprove of CP use and to show that many parents do not use CP, parents may be less likely to employ CP use as a child discipline strategy.

The second research question included examination of the association between perceived neighborhood collective efficacy specific to parenting and attitudes toward and use of CP. There was no significant association between perceived collective efficacy and attitudes toward CP. However, there was a marginally significant association between neighborhood collective efficacy and frequency of CP use. The normative influence of neighbors regarding CP use may be the primary driver for parental attitudes toward CP, which could explain the lack of association between collective efficacy and attitudes toward CP and the marginal association between collective efficacy and CP use.

Regarding the third research question for the study, no moderating effect was found for perceived collective efficacy in the association between neighborhood injunctive norms and attitudes toward CP. It is possible that this is because parents are only driven to increased use of CP with

collective efficacy, and because they already have positive attitudes toward CP driven by other normative influences, including service providers, family, and friends as shown in previous work (Taylor et al., 2011). This prior finding, along with the potential negative influence perceived collective efficacy has on parental CP use as found in this study, points to a need to further study the influence of neighborhood cohesion and control on harsh parenting behaviors including CP.

However, collective efficacy was found to moderate the relationship between perceived neighborhood injunctive norms and use of CP. The moderating effect of collective efficacy in the association between perceived neighborhood injunctive norms and CP use has significant implications, as it indicates that collective efficacy is not a uniformly protective factor for risk of child physical abuse. Past research on collective efficacy and child abuse has only demonstrated that high collective efficacy is protective against child abuse (Andresen & Telleen, 1992; Armstrong et al., 2005; Leventhal & Brooks-Gunn, 2003). However, these results indicate that high collective efficacy is not protective against maternal CP use if the mother perceives that her neighbors have high approval for CP use. These results point to the influence that neighborhood networks and their beliefs about CP may play in shaping parents' use of CP, and that influence may not always be positive.

Collective efficacy may impact parents' use of CP in that parents who perceive stronger community cohesion and norms of reciprocity among neighbors are more likely to be influenced by their perception of their neighbors' approval of CP use. However, even if parents do perceive low collective efficacy, they are still motivated by their perceptions of their neighbors approval of CP. Past research has only shown the positive effect neighborhood cohesion and quality of relationships has on parenting behaviors (Andresen & Telleen, 1992; Armstrong et al., 2005; Leventhal & Brooks-Gunn, 2003; Putnam, 2001; Sampson et al., 1997). Importantly, the normative influence of neighbors on parental CP use in this study demonstrates that collective efficacy is not always beneficial. Therefore, targeted efforts to change beliefs and attitudes regarding CP use at a neighborhood level may be valuable not only in shifting community norms supportive of CP but also in shifting social control amongst neighbors to discourage use of CP by parents. Neighborhood level efforts, including public campaigns and support programs, could be effective in building a more cohesive community of parents and supports that rejects CP use.

Limitations

There are some limitations in the design and measurement of this study. The adapted scales used to measure collective efficacy and injunctive norms were adapted specifically for this study and were not previously validated. Although these adapted scales allow for more specificity in the focus of the measures (i.e. parenting and neighbors), using them may have introduced some measurement bias. For example, the insignificant moderating effect of collective efficacy on the association between norms and CP use just for those mothers who reported moderate collective efficacy could be explained by this measurement bias. Further, the creation of cut off scores for measures in this sample to conduct data analyses may be a limitation to the generalizability of these findings. Another limitation is the possibility of self-selection bias. The analyses used may not have accounted for all individual factors related to self-selection into this study, possibly leading to self-selection bias. In order to reduce selection bias, recruitment for the overall RCT took place in several WIC clinic locations across the Greater New Orleans area to certify a larger variety of potential participants to recruit. Further, the specific use of propensity score matching in analyses also helped to reduce selection bias. Other potential biases introduced in this study include recall and social desirability biases with the use of parental-self report and specifically by asking about events in the past and about CP use. Actions to reduce these biases included use of some validated survey measures (e.g., ATS, BSI, HITS, exposure to physical aggression in childhood) and use of other survey questions that were pilot tested for accuracy. Lastly, the distinctive social environment of Southeast Louisiana creates the potential for lack of generalizability in results. However, by focusing on a WIC population in this study, results may be generalizable to other WIC populations and populations with similar socio-demographic characteristics.

Conclusions

The normative influence of neighbors on parental use of CP displays an entry point for more targeted community-level efforts to reduce risk for child physical abuse. The link found between perceived injunctive norms of neighbors, perceived collective efficacy, and use of CP in particular suggests the need for these efforts. To date, community level prevention efforts to change attitudes and reduce use of CP have primarily included state legislation (Global Initiative to End All Corporal Punishment of Children, 2017), and school-wide or hospital-wide policies to ban CP use (Gunderson Health System, 2017). Bans of CP use at the organizational level have shown some promise in shifting attitudes toward CP (Gershoff, Font et al., 2018). At a population-level, public education campaigns in other countries have shown promise in shifting attitudes toward and reducing use of CP (Bussman, Erthal, & Schroth, 2011; Council of Europe, 2016; Mckeown, 2006). Similar campaigns should be implemented at a national, state and community-level in the U.S.

to educate parents and others that may influence parents, such as neighbors, about the potential risks of CP use, its ineffectiveness, and alternative non-physical strategies for child discipline that are more effective.

There are effective norms changing activities at a community level as well. Community-based group programs have also been effective in reducing use of CP (Breitenstein et al., 2012; Gross et al., 2009; Knox, Burkhart, & Cromly, 2013; Knox, Burkhart, & Howe, 2011; Portwood, Lambert, Abrams, & Nelson, 2011). For example, parent peer support networks could be implemented within neighborhood organizations or community early childcare centers. Trained parent facilitators could guide activities to bring neighborhood parents together to share information and support, to promote positive parenting practices and to help parents advocate for one another to overcome the challenges of parenting. Implementing neighborhood-based programming on a larger scale could be effective in shifting larger community attitudes toward CP and reducing risk for child physical abuse.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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