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Infants' Unprovoked Acts of Force Toward Others

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Abstract

Infants harm others at higher rates than older children and adults. A common explanation is that infants fail to regulate their frustration, becoming aggressive when they do not get what they want. The present research investigated whether infants also use force against others without provocation, for instance because they seek to explore the consequences of hitting or try to pet someone using too much force. Two studies with infants aged 11 to 24 months investigated infants' use of force against others in everyday life using maternal report (Study 1) and direct observation (Study 2). In both studies, more than half of infants' acts of force were unprovoked and occurred without signs of infant distress. Unlike provoked acts, unprovoked acts showed a decrease late in the second year and were positively associated with reports of infant pleasure-proneness. The presence of unprovoked acts of harm may reflect that infants' actions are not reliably guided by an aversion for harming others and may provide unique opportunities for early moral development.

Keywords

interpersonal force; moral development; infancy; social interactions

Why do infants hit, bite, and kick others at higher rates than older children and adults? (Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006; Hay, 2005) The most common explanation is that infants harm others because they are poor at regulating their frustration (Berkowitz, 1989; Bloom, 2013; Hay, 2005; Loeber & Hay, 1997; Vitaro & Brendgen, 2005): When family members frustrate infants, for instance by taking away a desired object, infants sometimes (though not always) lash out in anger. In this view, children gradually stop resorting to force as they get better at regulating their frustration (Kopp, 1982). A key – yet uninvestigated – implication of this standard explanation is that infants do not hit, bite, or kick others without a provocation leading to frustration.

A contrasting hypothesis states that many of infants' forceful acts against family members are unprovoked and result from neither frustration nor provocation. If so, the standard frustration-based explanation would fit some forceful acts, but leave other forceful acts unexplained. The present research investigated this hypothesis.

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In general, interpersonal force can serve motives other than frustration. When hitting another person, children could be exploring the social consequences of hitting ("Will she get mad?") or seeking the person's attention (Brownell & Hazen, 1999; Dunn & Munn, 1985). Indeed, older children sometimes harm others in order to dominate or get objects – actions called *proactive*, as opposed to *reactive*, *aggression*[1] (Feshbach, 1964; Vitaro & Brendgen, 2005; Vitaro, Gendreau, Tremblay, & Oligny, 1998). Hence, the mere use of force is not by itself indicative of frustration – an examination of the circumstances of forceful acts is necessary.

Past research on infant interpersonal force has not addressed whether infants' forceful acts are usually provoked. One line of research has studied the development of forceful acts during conflicts (Caplan, Vespo, Pedersen, & Hay, 1991; Hay et al., 2014; Hay, Hurst, Waters, & Chadwick, 2011), which by definition excludes unprovoked acts. Other studies have used caregiver reports of instances of hitting or biting, but without asking about the circumstances (Côté et al., 2006; Tremblay et al., 2004). Hence, past research on infant forceful acts has not indicated whether infant acts of force are usually provoked and accompanied by distress or, alternatively, whether forceful acts also occur without provocation.

Indirect and anecdotal evidence suggests that infants do use force without provocation. For instance, although only 15% of mothers reported clear signs of anger at 6 months, about 70% of mothers in a British sample said that their child pulled people's hair (Hay et al., 2010). With reference to 15-month-olds, Bridges (1933) wrote that "attacks [against others] are indulged in at this stage for their own sake and are not out-grown till well after two years of age" (p. 48). In informal interviews preceding this research, the mother of an 18-month-old said: "She tends to gets very excited when she's playing with myself or my husband and then she'll suddenly get really excited and she'll give us a big whack in our face. […] then we'll take her hand and tell her nicely, 'Jessica no, that hurts'. She might go right back to doing it." However, no past studies have systematically investigated infants' unprovoked use of force.

The second year is a transition period in the development of forceful acts. Infants' anger and force toward others during conflicts emerge in the second half of the first year (Caplan et al., 1991; Eckerman, Whatley, & Kutz, 1975; Hay et al., 2011; Sternberg & Campos, 1990). Most 1-year-olds, but few 6-month-olds, react with anger and physical force when a peer takes an object away from them (Caplan et al., 1991; Hay et al., 2010; Hay, Nash, & Pedersen, 1983). During the first half of the second year, the average rate of physical force roughly doubles (Dunn & Munn, 1985; Hay, 2005). In the remainder of the second year, some report a continued increase (Dunn & Munn, 1985; Tremblay et al., 2004), while others report a temporary decrease (Hay, 2005). One possible explanation for differences in

[1]This article does not describe infants' use of force as "aggression." "Aggression" typically implies an *intent to harm*, which is difficult or impossible to assess in infants (Hay, 2005; Parke & Slaby, 1983; Tremblay, 2000). Largely for this reason, common dichotomies of aggression, such as reactive-proactive and hostile-instrumental, do not correspond to the categories of provoked and unprovoked force (see Gendreau & Archer, 2005). For instance, proactive or instrumental aggression are attempts to achieve goals such as dominance or possession by causing harm. Insofar as infants use unprovoked force, we would know neither that they are intending to harm others nor that they are seeking dominance, property, or some other reward.

reported age-trends is that forceful actions in the second year are a heterogeneous category, comprising both provoked and unprovoked acts.

The main goal of the two present studies was to investigate whether a substantial proportion of everyday infant acts of force are unprovoked and not accompanied by distress. Study 1 used maternal descriptions of forceful acts. Study 2 used direct observation of naturally occurring interactions in the home, thereby overcoming the potential reporting biases present in Study 1. This research focused on interactions in the home, where most infants spend a large amount of their waking time. Possible contextual variability will be further discussed in the General Discussion.

Study 1: Maternal Reports

Methods

Participants—Mothers of 74 infants (33 female, 11.1 – 24.0 months, M_{age} = 16.6 months) were recruited from a participant database in a large metropolitan area in the Western United States. Sixty-four percent were non-Hispanic Caucasian, 6% were Asian American, and the remaining participants were of another ethnicity or mixed. Families were mostly upper middle-class families living in a large metropolitan area in the western United States.

Procedures—Participants returned consent forms and a demographics questionnaire by mail. Mothers participated in a structured phone interview about various aspects of their infants' lives. As part of the interview, mothers were asked to describe a recent situation in which their child harmed someone else.

Data coding—A coder coded the maternal descriptions from the audio recordings and a second coder coded 20% of the data to assess interrater agreement. (Cohen's Kappas are listed in parenthesis after each code.) The following aspects were used (see Table 1): presence of force to another person's body (κ = 1.00), type of act (κ = .78), purposefulness of force (κ = 1.00), provocation (κ = .61), presence of child distress (κ = .81), and target of the child's forceful action (κ = .86).

Results

Situations described by six of the mothers did not mention the infant applying force to another person's body (e.g. because the mother intervened before the infant was able to apply force). These situations were not analyzed further.

Among the remaining 68 situations, infants' use of force was described as unprovoked in 76% of situations, provoked in 21% of situations, and accidental in 3% of situations. As shown in Figure 1, infant distress was significantly more likely in provoked (64%) than unprovoked situations (4%), Fischer's exact test: $p < .001$.

For completeness, the target and nature of the forceful acts are also reported: The most common target of the forceful actions were parents (69% of situations), followed by siblings (15%), other (12%), and pets (4%). Infant force were coded as biting (28%), hitting with hand (26%), hitting with object (9%), shoving (3%), and "other" (32%).

Discussion

In Study 1, maternal reports indicated that when infants purposefully use force against others, they often do so without visible provocation. This finding challenges the standard view that most or all of infants' acts of force are elicited by external provocation. Supporting the distinction between provoked and unprovoked use of force, distress was reported to accompany most provoked acts of force, but almost no unprovoked acts.

Study 2 used direct observations of everyday home interactions to corroborate and expand on the findings from Study 1. Direct observations overcome some of the limitations of maternal report. It is possible, for instance, that mothers in Study 1 sometimes forgot, or failed to notice, what provoked the infants' act of force. In addition, direct observations allowed for distinctions among categories of unprovoked force. Specifically, to better understand why infants use unprovoked force it is important to distinguish between when infants were exploring the social consequences of their forceful actions (explorative force) and events when infants tried to pet someone but used too much force (miscalibrated force).

Study 2 also included additional ways of validating the distinction between provoked and unprovoked force. First, provoked and unprovoked force were hypothesized to have different temperamental correlates. Since many unprovoked acts of force presumably reflect a pursuit of pleasant experiences (e.g. exploration), the frequency of unprovoked acts were hypothesized to correlate with parental reports of pleasure-proneness but not of anger-proneness (Goldsmith, 1996). In contrast, the provoked acts of force were expected to be associated with anger-proneness but not pleasure-proneness. To investigate this, parents participating in Study 2 were asked to fill out a temperament questionnaire.

Second, provoked and unprovoked force were expected to show different developmental trajectories. During the second year, infants' empathic capabilities grow more robust and infants increasingly try to relieve others' distress (Hoffman, 2001; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992). In unprovoked situations, when infants' inclinations to use force may be weak, merely noticing that force causes pain and being empathically concerned with preventing others' may be sufficient to stop. Therefore, it was hypothesized that the frequency of unprovoked acts of harm would decrease toward the end of the second year. In contrast, in provoked situations, infants are likely highly motivated to use force. Thus, infants' provoked force may not decrease until they acquire the additional linguistic, cognitive, and emotional skills to peacefully regulate their frustration (Calkins, 2007; Kopp, 1982). Moreover, infants' increasing demands for autonomy may increase the rate of conflicts, and hence provocations, over the course of the second year (Forman, 2007; Rijt-Plooij & Plooij, 1993). Hence, provoked acts of force were expected to increase throughout the second year.

Finally, direct observations allowed for assessment of others' reactions to infants' use of force. Anecdotal evidence from Study 1 indicated that family members reacted strongly when infants used force against others, providing infants with potentially valuable information about how their actions affected others. In Study 2, assessment of reactions to force allowed for verification that the coded forceful actions were serious enough to warrant negative reactions from others.

Study 2: Naturalistic Observations

Methods

Participants—Twenty-six families with an infant aged 14 months (11 female) were recruited to participate in a naturalistic home observation study. All infants had at least one older sibling. Sixty-three percent of parents were non-Hispanic Caucasian, 19% were Asian American, and 19% were of African-American, Hispanic, other, or mixed ethnicity. Seventy-seven percent of caregivers had a college degree and 29% had a graduate degree. Most families were middle-class families living in a metropolitan area in the western United States.

Procedures—Families participated in a 2.5-hour video-taped home visit when the target child was 14 months ($N = 26$), 19 months ($N = 24$), and 24 months ($N = 22$). To keep the context of the observations somewhat similar, the mother and one sibling were required to be present for the visit. At the first visit, mothers completed a demographics questionnaire. At the third visit, mothers completed the Toddler Behavior Assessment Questionnaire (TBAQ), which asks mothers to rate their infants on 120 items assessing 11 scales (Goldsmith, 1996). Only the anger and pleasure subscales were analyzed (see above).

Families were told that the study was about infants' everyday experiences and that they should do whatever they would normally be doing during the time of observation. The observer videotaped the child's activities. If the child applied force to another person's body, the observer electronically logged the event using an iPod Touch (*Apple Inc.*). If in doubt, observers were instructed to log the event so that a final decision could be made from the videotapes. Observers were trained, using videotapes from pilot observations, until they logged at least 80% of situations logged by the author.

Data coding and analysis—Coders coded the logged situations from the video tapes in the lab. Coders identified actual force in 84% of situations logged. Reliability for the coding of the videotapes was assessed by having a second coder code 20% of the data. (Cohen's Kappas are listed in parenthesis after each code.)

Study 2 used the coding categories used in Study 1: presence of force ($\kappa = .71$), type of forceful act ($\kappa = .80$), whether act was purposeful ($\kappa = .83$), whether act was provoked ($\kappa = .70$), presence of child distress ($\kappa = 1.00$), and identity of victim ($\kappa = 1.00$). In addition, the following three additional aspects were coded (see Table 1): nature of the provocation (if provoked, $\kappa = 1.00$), type of unprovoked force (if unprovoked, $\kappa = .73$), and response elicited by others ($\kappa = .79$).

To analyze the frequency of interpersonal force events as a function of child age and temperament scores, Generalized Linear Mixed Models (GLMMs) with Poisson error distribution and logarithmic link function were fitted with random intercepts for children. To analyze the presence of particular aspects (e.g. child distress) GLMMs with binomial error distribution and logistic link function were fitted. Hypotheses were tested using likelihood ratio tests (Hox, 2010). Preliminary analyses revealed no significant effects of child gender, so this variable was not included in the final model.

Results

Distribution of interpersonal force events—Coders noted 171 instances of a child using interpersonal force (mean rate: 0.95 situations/hour, inter-quartile range [IQR]: 0.40 – 1.20 situations/hour). All infants who participated in three visits used force at least once.

Forty-nine percent of situations were unprovoked, 43% were provoked, and 8% were accidental (Figure 2). Among infants who participated in three visits, 82% had at least one unprovoked force event. Mean Spearman correlations between per-visit frequencies was .14 for unprovoked acts and .20 for provoked acts. Mean correlation between provoked as unprovoked acts was .08.

Also as in Study 1, the presence of infant distress was far less common in unprovoked situations (1%) than in provoked situations (36%), binomial GLMM: $D(1) = 31.63$, $p < .001$. Study 2 corroborated evidence from Study 1 that a large proportion of infants' forceful actions are unprovoked and not accompanied by signs of frustration.

A main purpose of Study 2 was to assess the specific contexts of infants' acts of force. The most common type of unprovoked situation was explorative force (e.g. seeking attention, 49% of unprovoked situations), while 37% of unprovoked situations were classified as miscalibrated force (e.g. petting dog too hard), and the remaining 14% were coded as other. Fifty-one percent of provoked events pertained to physical obstruction (e.g. holding child back), 29% pertained to property conflicts, and 20% pertained to other provocations (e.g. refusing to give child what child wants).

For completeness, the target and nature of the forceful acts are also reported: Siblings were the most common victims of infants' interpersonal force (56%), followed by parents (31%), pets (11%), and other (2%). The most common force types were hitting with hand (31%) and hitting with object (25%), followed by kicking (12%), shoving (9%), and biting (8%). Fifteen percent of situations were classified as other (e.g. pulling hair).

Distinct predictors of provoked and unprovoked force—Another purpose of Study 2 was to investigate whether provoked and unprovoked acts were diffentially associated with child age and temperament. As predicted, the frequency of unprovoked acts showed a curvilinear relation to child age, Poisson GLMM: $D(1) = 8.30$, $p = .004$ (Figure 4). The mean per visit frequency of unprovoked acts of force was 0.85 at Visit 1, 1.42 at Visit 2, and 1.27 at Visit 3. Also as predicted, the same model showed a significant, positive relation between TBAQ pleasure score and frequency of unprovoked acts, $D(1) = 8.77$, $p = .003$, but no significant relation between TBAQ anger score and unprovoked acts, $D(1) = 0.90$, $p = .34$.

In contrast, there was a positive relation between infant age and provoked acts of force, $D(1) = 9.34$, $p = .002$. The mean per visit frequency of provoked acts of force was 0.65 at Visit 1, 1.13 at visit 2, and 1.32 at Visit 3. There was no significant relation between provoked acts and TBAQ pleasure score, $D(1) = 0.005$, $p = .95$, or TBAQ anger score, $D(1) = 0.05$, $p = .82$. (There was a near-significant interaction between TBAQ anger score and child age in

predicting the frequency of provoked force, as the relation between anger score and provoked force was more positive for older infants, $D[1] = 3.76$, $p = 0.05$).

Reactions to forceful actions—A final purpose of Study 2 was to assess whether family members signaled disapproval of infants' forceful action. In 67% of situations, infants' forceful acts elicited negative verbal reactions from others: expression of pain by victim (29% of situations), prohibition (37%), or instruction to be gentle (18%). The probability of eliciting at least one such verbal reaction depended significantly on the type of situation, $D(2) = 10.00$, $p = .007$, being higher in the unprovoked force situations (79%) than in the accidental force situations (64%) and the provoked force situations (53%). As shown in Figure 3, all types of verbal reactions were more common in unprovoked than in provoked situations. However, references to pain were by far the most likely in the accidental force situations, whereas the other two types of verbal reactions were rare in such situations. (Situation by verbal reaction type interaction: $D(4) = 14.08$, $p = .007$.)

Discussion

Study 2 supported the general findings from Study 1: A substantial proportion of infants' acts of force against others were unprovoked and not accompanied by signs of frustration. As in Study 1, infant distress accompanied provoked force more often than unprovoked force, further supporting the distinction between the two categories of purposeful acts of force against others.

Study 2 also provided novel forms of evidence for the validity of the distinction between unprovoked and provoked force. Unprovoked force situations were more likely than provoked force situations to elicit expressions of pain from the victim, verbal prohibitions, and instructions to be gentle. The frequency of unprovoked situations showed a curvilinear relation with infant age, whereas the frequency of provoked situations generally increased throughout the second year. Finally, the frequency of unprovoked situations, but not that of provoked situations, was positively associated with parental reports of children's pleasure-proneness. While rates of provoked acts were not significantly associated with anger-proneness, this hypothesized association seemed to emerge toward the end of the second year.

Most acts of force – but especially unprovoked ones – elicited negative reactions from family members. These signals provide information to infants about how their actions affect, and are perceived by, others (Hoffman, 2001) and may contribute to the decline of unprovoked acts of force observed toward the end of the second year.

General Discussion

Two studies, using different methods, showed that a large proportion of infants' forceful actions were unprovoked and not accompanied by distress. Most infants used unprovoked force at home. These unprovoked acts do not fit the standard, frustration-based explanation of infant acts of force (Berkowitz, 1989; Bloom, 2013; Hay, 2005; Loeber & Hay, 1997; Vitaro & Brendgen, 2005).

The distinction between provoked and unprovoked use of force was supported by several pieces of evidence. The basic distinction was made by deciding whether a purposeful use of force was preceded by a frustration of the infant's desire. This distinction was validated by evidence that infant distress was more common in provoked situations (both studies), unprovoked situations more often elicited reactions from others, and the frequency of the two types of situations showed different relations to infant age and parent-reported pleasure-proneness (Study 2).

Direct observations suggested that some unprovoked acts of force were forms of social exploration (seeking a reaction or attention), while other acts represented excessive force during otherwise acceptable actions (e.g. petting a pet too hard) (Brownell & Hazen, 1999). A lack of regulatory abilities likely contributes to high rates of provoked harm in infancy (Hay, 2005; Kopp, 1982), but this lack does not readily explain why infants use unprovoked force. Unprovoked situations contain no obvious motive for using force, and almost never included infant distress, minimizing the need for regulation of distress or forceful impulses.

The frequency of unprovoked force decreased in the second half of the second year. What makes infants stop using unprovoked force? There are at least two possible scenarios. One possibility is that infants initially do not care if they harm others. Although infants show growing sensitivity to others' distress, this sensitivity remains limited around the first birthday (Roth-Hanania, Davidov, & Zahn-Waxler, 2011; Zahn-Waxler et al., 1992). Mothers reported that 13- to 15-month-olds showed positive affect more often than empathic concern after causing distress to someone (Zahn-Waxler et al., 1992). The decrease in unprovoked force late in the second year may result from an increasing sensitivity to distress (Svetlova, Nichols, & Brownell, 2010; Zahn-Waxler et al., 1992).

The second possibility is that infants want to avoid causing pain to others, but fail to realize that their biting, kicking, or hitting others causes pain. If so, the decline in unprovoked use of force may result from infants' gradually realizing that how force affects others. Negative reactions to infants' acts of force, documented in Study 2, may help infants' understand this causal relation. While this scenario remains a possibility, it is difficult to imagine how infants could be concerned with others' pain without realizing that pain results from the application force to one's body.

To explain decreases in forceful acts it will be necessary to study infants' use of others' reactions to force. Unprovoked acts of force may engender particularly valuable learning experiences. Some of these acts may be attempts to seek reactions from others, representing a form of limit-testing (Dunn & Munn, 1985; Lamb, 1991). Moreover, unprovoked acts of force typically occurred without infant distress, making it easier to attend to signals of distress and prohibition from others. It might be harder for infants to learn from episodes when they are focused on their own frustration (provoked situations) or when the force was unintended (accidental situations).

This study did not investigate contextual variability in infants' use of force. Such variability is expected, both within and between individuals. For instance, infants may show different rates of unprovoked and provoked force during interactions with peers than during

interactions with family members. Same-age peers could be more prone to provoke force in each other by snatching toys or using force (Caplan et al., 1991). There may also be differences in rates of provoked and unprovoked force between communities, for instance due to different ways of reacting to infants' use of force. While some communities appear to ignore many of infants' forceful acts (Briggs, 1971; Rogoff, 2003), other communities encourage young children to respond forcefully to provocation (Miller & Sperry, 1987). Additional research using larger and more diverse samples is needed to investigate variability in the nature of and reactions to interpersonal force.

A number of studies have reported that infants' use of force is related to subsequent externalizing problems (e.g. Cummings, Iannotti, & Zahn-Waxler, 1989; Keenan, Shaw, Delliquadri, Giovannelli, & Walsh, 1998; Shaw, Owens, Giovannelli, & Winslow, 2001). Since unprovoked force is shown by most infants, and may reflect neither anger nor intent to harm, it could be unrelated to subsequent aggressive tendencies. It will thus be important to distinguish between provoked and unprovoked force in future research on antecedents and predictors of childhood aggression.

The two present studies show that infants' use of force against others is more diverse than typically assumed. The findings supported the view that a large proportion of infants' acts of hitting, biting, and kicking others is not a result of poor regulation of frustration, but may reflect a desire for social exploration or a failure to realize when their actions cause pain to others. These acts were particularly common in the middle of the second year and may provide unique opportunities for the development of a basic aversion to harming others. Contextual variability in unprovoked force and in others' reactions to such acts are important topics for future work. Across such variability, children in most or all communities come to see it as categorically wrong to harm others without justification (Astor, 1994; Jambon & Smetana, 2014; Smetana, 2006; Smetana & Braeges, 1990). Explaining this development is a major task for research on early moral development.

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Research Highlights

- It is typically assumed that infants hit, bite, and kick others more often than older children because infants are unable to peacefully regulate their frustration.
- This research shows that a large proportion of infants' acts of force toward others occur without provocation and without signs of distress.
- Unprovoked acts of interpersonal force constitute a distinct category of interpersonal force in infancy, having different age trends and temperamental correlates than provoked acts of force.
- Experiences with unprovoked force may strengthen children's growing understanding of how their actions affect others.

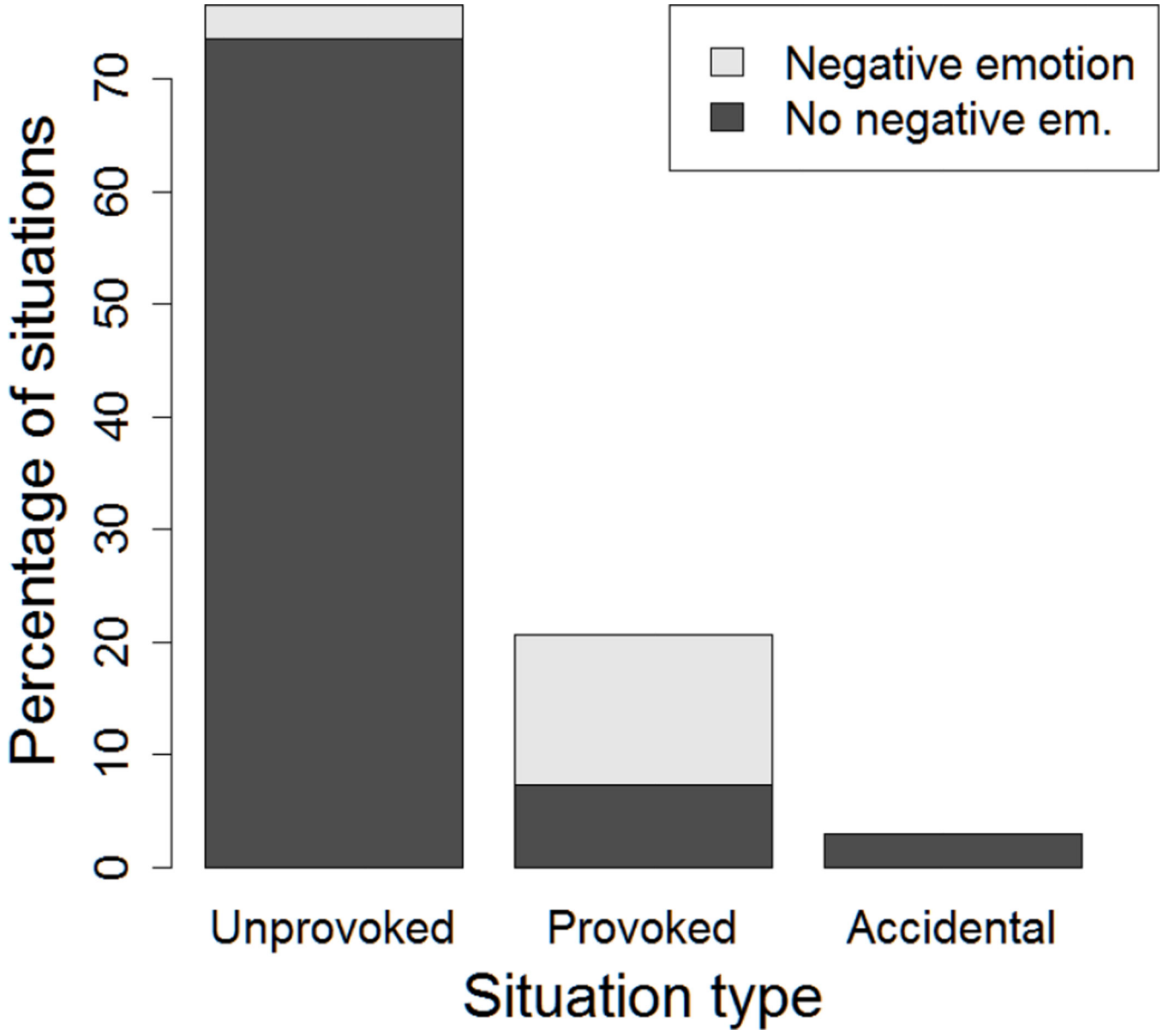

Figure 1.

Study 1: Distribution of infant interpersonal force situations. Bars show percent of total number of situations involving unprovoked, provoked, and non-purposeful harm in which infants showed distress (dark gray) or no distress (light gray). For instance, the leftmost bar indicates that 73% of situations were unprovoked with no distress and 3% of situations were unprovoked with distress. Hence, that 3%/(3% + 73%) = 4% of unprovoked situations contained distress.

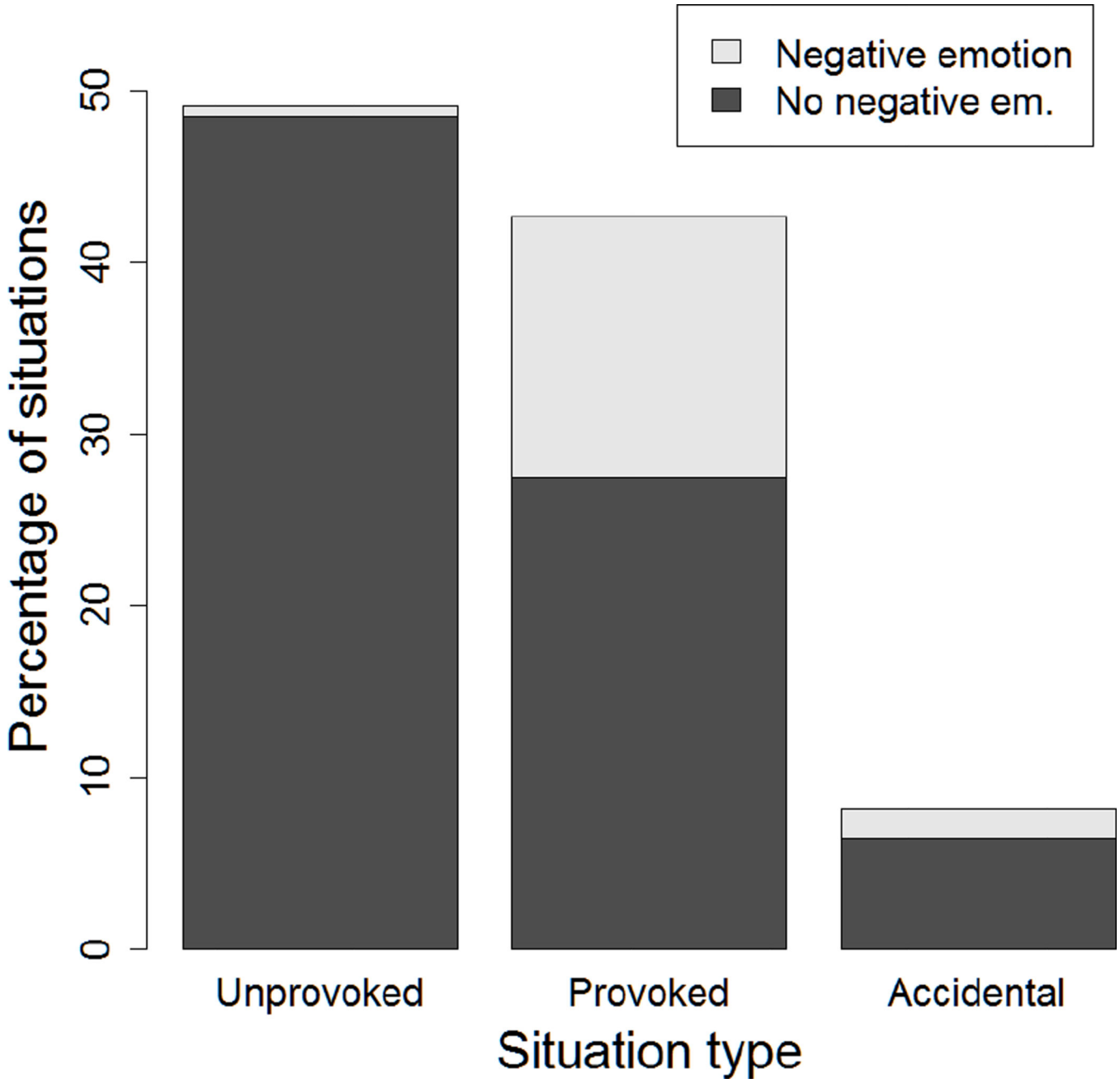

Figure 2.
Study 2: Distribution of infant interpersonal force situations. Bars show percent of situations involving unprovoked, provoked, and non-purposeful harm in which infants showed distress (dark gray) or no distress (light gray).

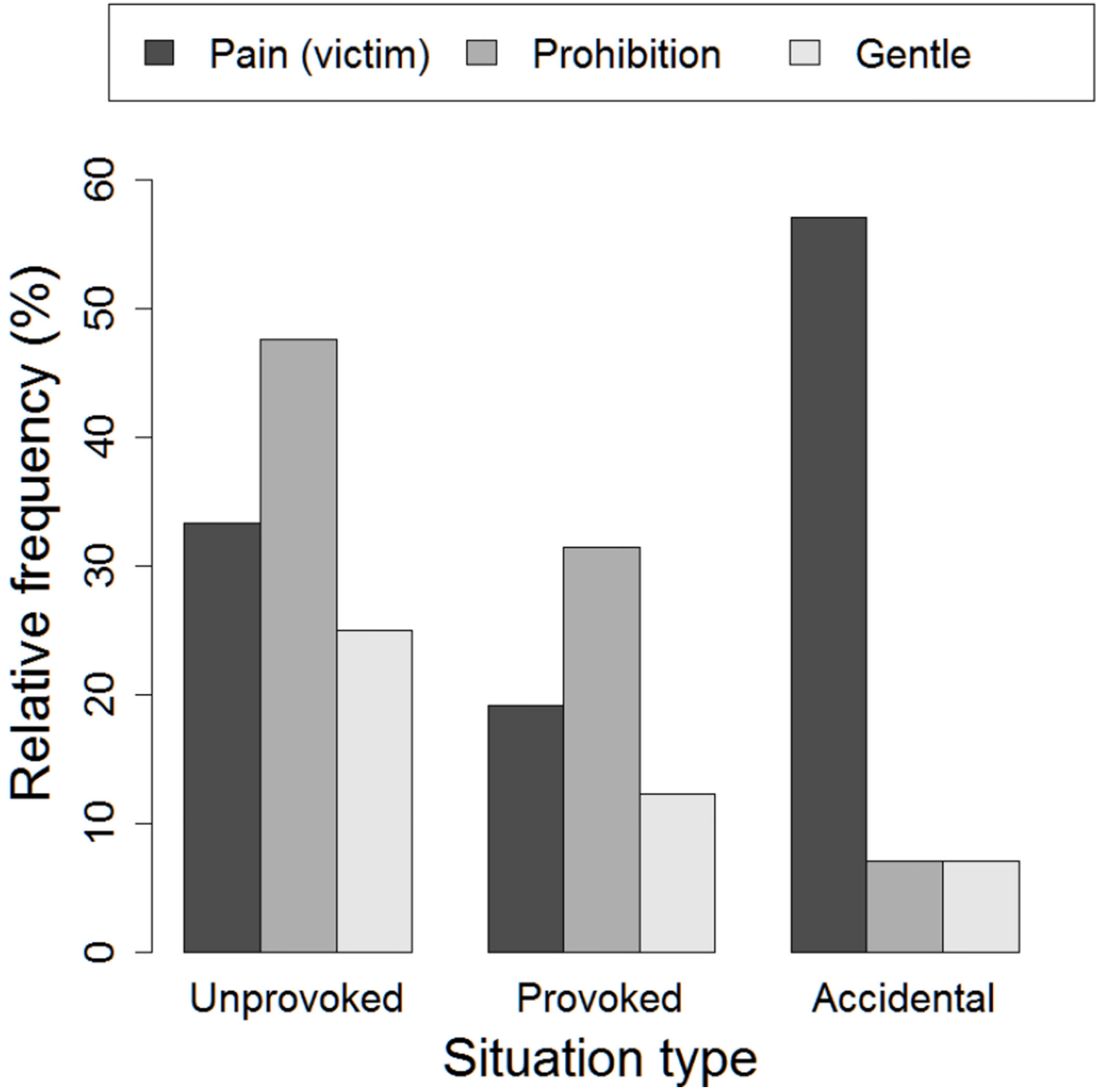

Figure 3.
Relative frequency of reactions as a function of situation type (Study 2). Bars show the relative frequency of the three verbal reaction types (victim expression of pain, prohibition, instruction to be gentle) as a function of situation type (unprovoked, provoked, and accidental force). For instance, the leftmost bar indicates that 33% of unprovoked force situations elicited an expression of pain from the victim.

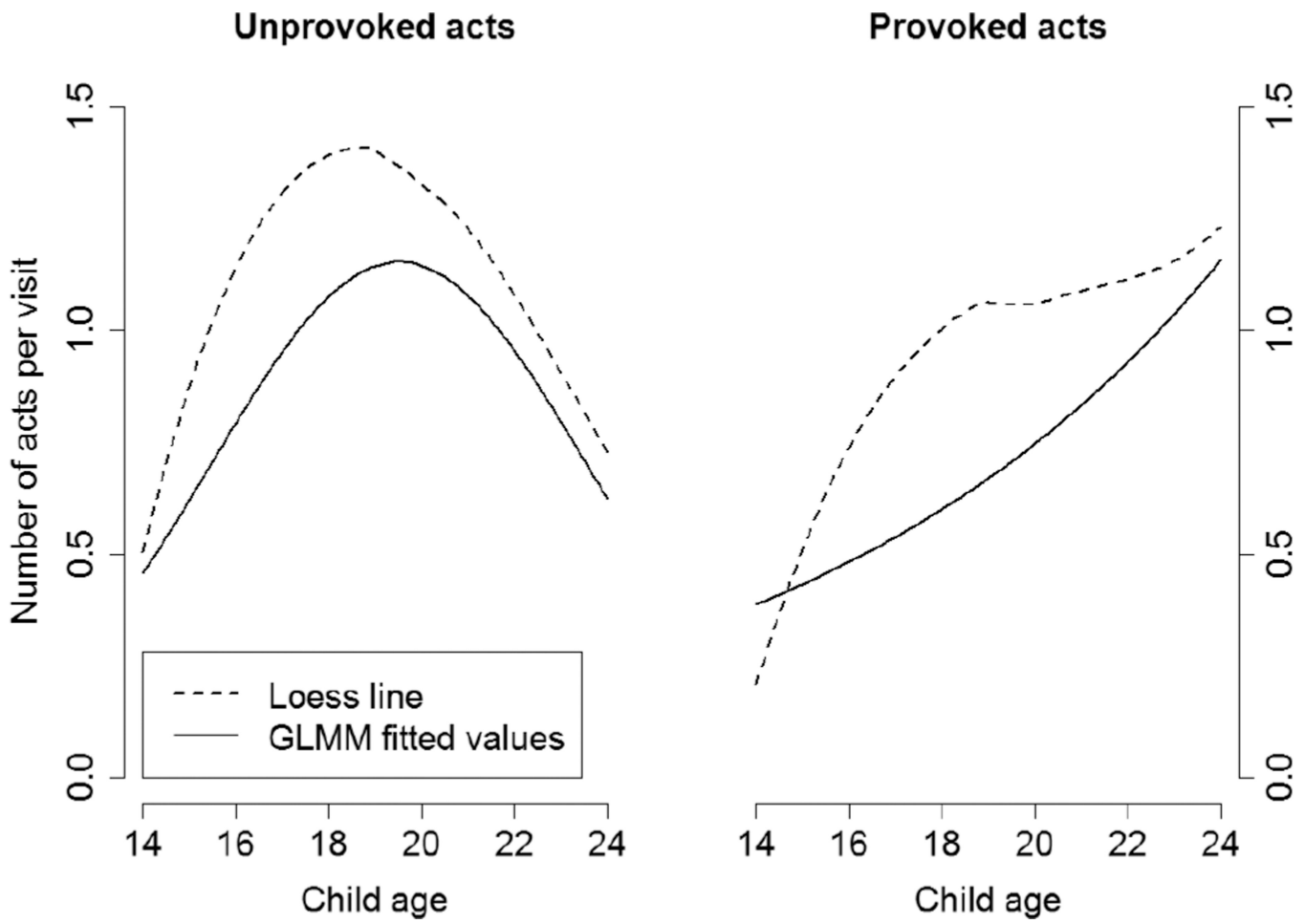

Figure 4.

Study 2: Relation between child age and frequency of unprovoked and provoked acts of force per visit. Dashed lines show predicted values from a local polynomial regression fitting (Loess, span = 1). Solid lines show fitted values from Poisson GLMMs with random intercept for child and fixed linear and (unprovoked only) curvilinear effects of age.

Table 1

Coding Categories

Aspect	Definition	Codes	Examples of each code
		Studies 1 and 2	
Force	Event involved the application of abrupt force to another person's body	*Forceful*	C. hits mother C. bites sibling
		Non-forceful	C. flails arms but does not hit
Type of act	The motoric nature of the forceful act	*Biting* *Hitting w/ hand* *Hitting w/ object* *Shoving* *Other*	- - - - -
Purposeful	Application of force was not accidental	*Purposeful*	C. looks at victim before hitting C. kisses parent's arm then bites
		Accidental	C. knocks object off table onto pet C. runs into sibling without looking
Provocation	Application of force was preceded by a frustration of the C.'s desire	*Provoked*	C. is kept from toy, then hits C. hits sibling after sibling takes toy
		Unprovoked	C. suddenly hits sibling C. walks over to parent and bites
Distress	C. shows facial or vocal sign of distress	*Distress*	C. cries before hitting C. screams angrily while pulling hair
		No distress	C. shows no distress before hitting
Target	Who was the target (victim) of C.'s act of force?	*Parent* *Sibling* *Pet* *Other*	- - - -
		Study 2 only	
Type of provocation	What type of provocation preceded the act of force?	*Physical obstruction*	C. is picked up and carried away Mother blocks C.'s access to room
		Property conflict	Sibling pushes C. from computer C. tries to take sibling's toy
		Other	Parent says C. can't have snacks Parent refuses to let C. watch TV
Type of unprovoked force	What kind of unprovoked use of force did the infant engage in?	*Exploration*	C. looks to parent after hitting C. simply picks up truck and hits sibling with it
		Miscalibration	C. pets cat, but too forcefully C. hands object to parent so hard it hurts parent
		Other	C. uses force as part of a game
Reaction to force	How did victim and others react verbally to forceful act?	*Pain (victim)* *Prohibition* *Gentle*	"Ow! That hurts mommy" "No, we don't hit!" "Gentle touch!"

Notes. C. = Child.