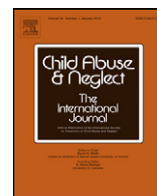




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Prevalence and correlates of sibling victimization types[☆]

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ABSTRACT

Objective: The goal of this study was to document the prevalence and correlates of any past year sibling victimization, including physical, property, and psychological victimization, by a co-residing juvenile sibling across the spectrum of childhood from one month to 17 years of age.

Methods: The National Survey of Children's Exposure to Violence data set ($N = 1,705$) was used which includes telephone interviews conducted with an adult caregiver (usually a parent) about one child randomly selected from all eligible children living in a household. If the selected child was 10–17 years old, the main telephone interview was conducted with the child.

Results: Sibling victimization rates were 37.6% for the full sample, peaking at 45% for the 2–5 year olds and 46% for the 6–9 year olds. Rates were higher for males, whites, and those who were closer in age to their sibling. Sibling victimization was also higher in brother–brother pairs and among children who had a parent with some college education.

Conclusion: The results add to a growing body of literature on aggressive sibling behavior by demonstrating the importance of taking a comprehensive approach to studying sibling victimization and considering individual, sibling, and family correlates of such behavior. This study's approach to the study of sibling aggression also extends the literature on this generally unrecognized form of family violence.

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The majority of children and youth in the United States grow up with a sibling (78%; Kreider & Ellis, 2011). Sibling relationships can be a source of companionship and support (Tucker, McHale, & Crouter, 2001) but they also can be a context of conflict and aggression, providing unique opportunities for children and youth to engage in a broad range of aggressive behaviors (Patterson, 1986; Slomkowski, Rende, Conger, Simons, & Conger, 2001). Because aggressive behavior between siblings is typically accepted and viewed as normal (e.g., Kettrey & Emery, 2006), it has not received much attention beyond small studies of incidents of simple assault and bullying. Sibling aggression, however, has been shown to be associated with a number of poor outcomes including lower well being, negative externalizing behaviors, and relationship problems (e.g., Garcia, Shaw, Winslow, & Yaggi, 2000; Noland, Liller, McDermott, Coulter, & Seraphine, 2004). In the current study, using a national data set, a comprehensive examination of sibling victimization is presented by documenting the prevalence of any past year victimization and its subtypes (e.g., physical, property, and psychological) by a co-residing juvenile sibling for

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children and youth aged from one month to 17 years of age. Also, we explore the individual, sibling, and family characteristics associated with sibling victimization.

Historically, sibling aggression has been viewed as normal (Caspi, 2012). As such, parents and others often minimize its frequency and severity (e.g., Martin & Ross, 1996; Hardy, 2001), despite the fact that the same behavior among peers is often viewed much differently. Several theoretical frameworks including neo-Freudian and Adlerian ideas (see Whiteman, McHale, & Soli, 2011), family systems theory (see Caspi, 2012) and evolutionary biology (Mock & Parker, 1998), note that sibling aggression is something to be expected as siblings are natural competitors for parents' attention and family resources. The social learning perspective (Bandura, 1973) has also been highlighted as an explanation for sibling aggression. For instance, Patterson's work (1986) on sibling aggression and sibling deviancy training built on social learning theory ideas, suggests that aggressive sibling exchanges are modeled and reinforced through repeated and escalating cycles of negative behaviors. Sibling aggression, however, is rarely viewed as criminal and, in some cases, parents perceive sibling aggression as beneficial for their children's social development (Goodwin & Roscoe, 1990; Stormshak, Bellanti, & Bierman, 1996). Although recently some scholars have argued that rivalry and aggression among siblings are not equivalent (Caffaro & Conn-Caffaro, 1998), sibling aggression generally remains an unrecognized form of violence by researchers and the general public (Caspi, 2012; Hoffman & Edwards, 2004; Kettrey & Emery, 2006).

The prevailing social norms around the acceptability of sibling aggression (Eriksen & Jensen, 2009) have likely discouraged interest in the prevalence and severity of sibling aggression. Currently, the literature on sibling aggression is poorly specified by the use of a variety of terms including: abuse, assault, bullying, conflict, rivalry, victimization, violence (Kettrey & Emery, 2006). In addition, this body of research is limited by methodological inconsistencies in how sibling aggression is defined and measured (Eriksen & Jensen, 2009). For example, there is variability in time frame given to rate the frequency of sibling aggression (e.g., in the past year, past month), the types of aggression assessed, and whether the accounts are retrospective or recent. As such, reports of the frequency have ranged from rare to frequent and reports of intensity have ranged from mild to severe. Adding to the difficulty of assessing the extent and nature of sibling aggression is the lack of national-level data. With the exception of work by Finkelhor and colleagues (e.g., Finkelhor, Turner, & Ormrod, 2006) and by Krienert and Walsh (2011), prior studies have included small and/or clinical samples and have focused on a single developmental period (e.g., childhood, adolescence or college-aged) with the majority of work focusing on preschool-aged children (Goodwin & Roscoe, 1990). The current study addresses some of these issues by using a national data set to describe the prevalence of victimization by a sibling in the past year for children and youth aged 1 month to 17 years of age.

This study also will address the problem of multiple and poorly defined terms typically found in the literature describing sibling aggression. The variety of terms used in prior research may be reflective of the broad range of behaviors that can comprise acts of sibling aggression. The current study aims to provide a comprehensive picture of sibling aggression through its examination of three subtypes of sibling aggression: physical, property, and psychological victimization by a sibling. Of the three subtypes of sibling aggression, physical aggression is the most often studied, but few studies have considered injury rates. But, for those few studies that explicitly define and assess minor and major injuries, a more differentiated picture emerges. For example, analyzing a sample of 33,066 siblings under the age of 21 from the Incident-Based Reporting System (NIBRS) developed by the FBI, Krienert and Walsh (2011) found that 51.5% reported minor injuries and 3.1% reported major injuries. Since these were incidents reported to law enforcement, it is possible this study only captured more extreme sibling incidents.

The frequency of physical aggression among siblings is most prevalent among younger children (Caspi, 2012; Martin & Ross, 2005). The literature, however, is inconsistent as to whether physical aggression between siblings peaks again during adolescence (Goodwin & Roscoe, 1990; Tremblay, 2005; Tremblay & Nagin, 2005) or before (Finkelhor, Ormrod, & Turner, 2009a). A decline in physical aggression among siblings with age may reflect their decreased involvement with one another and the tendency to replace physical aggression with more socially acceptable modes as their abilities to express themselves improves (Bjorkqvist, Lagerspetz, & Kaukiainen, 1992; Perlman, Ross, & Garfinkel, 2009). This is consistent with other work on sibling conflict that shows a peak during school-aged years and then a decline across adolescence accompanied by an increase in positive sibling interactions (Buhrmester & Furman, 1990; Kim, McHale, Osgood, & Crouter, 2006). Evidence of injuries caused by a sibling, however, suggest a different pattern, with rates increasing across childhood culminating with the highest rates for older adolescents (Finkelhor et al., 2006) perhaps due to increased physical strength and access to weapons.

Insight into sibling property victimization comes from the limited number of studies that have focused on the content of sibling conflicts. These studies have found that the majority of siblings' conflicts stem from issues around personal possessions (McGuire, Manke, Eftekhari, & Dunn, 2000; Raffaelli, 1992) and siblings often engage in grabbing, taking, and ruining one another's property (Finkelhor, Ormrod, Turner, & Hamby, 2005a; Martin & Ross, 2005). Sibling property victimization may be more common with younger children as they are developing a sense of self, learning what is theirs versus their siblings' possessions, and understanding property ownership and rights (McGuire et al., 2000). Beyond these few studies, because exploration of sibling property victimization has been limited to a single item analyzed as part of a multi-item measure of sibling conflict, little is known.

Psychological aggression, sometimes referred to as verbal or emotional aggression, includes name calling, taunting, and threatening another. Psychological aggression may be more common than physical aggression but is rarely studied and believed to be severely underestimated (Caspi, 2012). Evidence of sibling psychological aggression comes from studies of adolescents in which 50–60% report being psychologically aggressive toward their sibling (Goodwin & Roscoe, 1990;

Roscoe, Goodwin, & Kennedy, 1987). Due to developmental changes in the expression of aggression noted earlier, sibling psychological aggression may be more prevalent in adolescence as compared to childhood.

As part of this study's comprehensive examination of sibling aggression, it examines its links to individual characteristics, structural qualities of the sibling relationship, and demographic features of the family. With respect to individual characteristics, the findings are inconsistent regarding gender variations in sibling aggression (e.g., Brody, Stoneman, Mackinnon, & Mackinnon, 1985) while others show a general pattern of higher rates among males (e.g., Eriksen & Jensen, 2009; Goodwin & Roscoe, 1990; Krienert & Walsh, 2011). Gender differences are more common among preschool-aged siblings than among older dyads (Martin & Ross, 2005). Three studies have explored race/ethnicity differences in sibling aggression and found that compared to African-American and Hispanic children and youth, white children and youth report greater frequency (Eriksen & Jensen, 2009; Finkelhor, Ormrod, Turner, & Hamby, 2005b; Krienert & Walsh, 2011). According to Caffaro (2011), it is likely that the ethnic differences in reported rates of sibling aggression reflect differing cultural expectations with regard to the level and frequency of normal versus aggressive sibling behavior. It may be the case that many cultures including African-American and Hispanic are more likely to view aggressive behavior among siblings as normal (Caffaro, 2011).

A significant literature demonstrates that sibling relationship experiences vary as a function of structural qualities including the gender constellation of the dyad, birth order, and sibling age difference. Contradictory findings have emerged in studies linking sibling aggression and sibling gender constellation with some showing no differences (Kettrey & Emery, 2006; Yu & Gamble, 2008) and others finding that brother–brother pairs have the highest levels of sibling aggression (Goodwin & Roscoe, 1990; Hoffman, Kiecolt, & Edwards, 2005; Williams, Conger, Blozis, 2007). Birth order also may make a difference; older siblings tend to fight more with younger siblings than the reverse (Buhrmester, 1992). Some work also shows that compared to younger siblings, older siblings engage in more physical, property, and psychological aggression (Hoffman et al., 2005; Martin & Ross, 2005). Finally, with respect to sibling age difference, sibling aggression is greater among siblings who are close in age (Furman & Buhrmester, 1985; Hoffman et al., 2005). However, injury rates due to sibling aggression are higher when the sibling age gap is greater (Raffaelli, 1992), perhaps due to cognitive and physical differences among siblings.

This study's examination of family correlates of sibling aggression includes a consideration of parents' marital status and education level. Evidence of the links between sibling aggression and each of these family correlates is scant. For instance, in terms of parents' marital status, Hardy (2001) found no differences in sibling aggression between single versus dual-parent homes. Whereas another study showed that sibling aggression was higher in always-married compared to stepfamilies (Hoffman et al., 2005). Financial stability and greater financial resources which tends to be linked with education level is tied to less severe sibling aggression (Eriksen & Jensen, 2009; Hardy, 2001). Taken together, prior work on the correlates of sibling aggression is limited and sometimes inconsistent and does not provide clear guidance for hypotheses about how the individual, sibling and family characteristics of interest may be linked with sibling aggression experiences. In summary, using a national data set and taking a comprehensive approach to the study of sibling victimization, the current study explored two research questions: (1) What is the prevalence of sibling victimization by a co-residing juvenile sibling for those individuals ages one month to 17 years of age? and (2) What are the individual, sibling and familial correlates of sibling victimization?

Method

Participants

The National Survey of Children's Exposure to Violence (NatSCEV) was designed to obtain incidence and prevalence estimates of a wide range of childhood victimizations (Finkelhor, Ormrod, Turner, & Hamby, 2011; Finkelhor, Turner, Ormrod, & Hamby, 2009; Hamby, Finkelhor, Turner, & Ormrod, 2010; Turner, Finkelhor, & Ormrod, 2010; Turner, Finkelhor, Ormrod, & Hamby, 2010). Conducted between January 2008, and May 2008, the survey focused on the experiences of a nationally representative sample of 4,549 children age 1 month to 17 years of age living in the contiguous United States. The interviews with parents and youth were conducted over the phone by the employees of an experienced survey research firm.

The primary foundation of the design was a nationwide sampling frame of residential telephone numbers from which a sample of telephone households was drawn by random digit dialing (RDD), a standard procedure for telephone interviews (Babbie, 2011). This nationally representative cross-section yielded 3,053 of the 4,549 completed interviews. To ensure that the study included a sizeable proportion of minorities and low-income respondents for more accurate subgroup analyses, there was also an over-sampling of U.S. telephone exchanges that had a population of 70% or more of African American, Hispanic, or low-income households. Random digit dialing (RDD) employed with this second "over-sample" yielded 1,496 of the completed interviews. Sample weights were applied to adjust for differential probability of selection due to: (a) study design, (b) demographic variations in non-response, and (c) variations in within-household eligibility.

The current research focuses on 1,705 children aged 1 month to 17 years who had one sibling under age 18 living in the household at the time of the interview. Due to the survey design, some variables used in the analyses could be constructed only for these children. Thus, children who had two or more juvenile siblings residing in their household were excluded. The sample was approximately evenly divided across sex (51% male) and age. In terms of ethnicity, 63% of the children and youth were White, non-Hispanic followed by 18% Hispanic, any race, 13% Black, non-Hispanic, and 6% other race, non-Hispanic. Most of the children and youth were from two-parent households (69%) with the second largest group being from a single

parent family (20%). The largest percentage had a parent with a bachelor's degree (46% versus 27% with a parent with some college and 27% with a parent with a high school degree or less).

Procedure

A short interview was conducted with an adult caregiver (usually a parent) in each household to obtain family demographic information. One child was randomly selected from all eligible children living in a household by selecting the child with the most recent birthday. If the selected child was 10–17 years old, the main telephone interview was conducted with the child after parent/caregiver and child consent. If the selected child was under age 10, the interview was conducted with the caregiver who “is most familiar with the child’s daily routine and experiences.” A safety protocol was implemented to ensure confidentiality of responses and privacy during the interview. Telephone interviews have been shown to be perceived by respondents as more anonymous, less intimidating, and more private than in-person interviews (Acierno, Resnick, Kilpatrick, & Stark-Riemer, 2003; Taylor, 2002) and may yield greater disclosure of victimization events (Acierno et al., 2003). Comparison between proxy (i.e., parent) and self (i.e., child) reports with this instrument found no evidence of reporter bias (Finkelhor, Hamby, Ormrod, & Turner, 2005; Finkelhor, Ormrod, & Turner, 2009b).

Respondents were promised complete confidentiality, and were paid \$20 for their participation. The interviews, averaging 45 min in length, were conducted in both English and Spanish. Two hundred and seventy-nine of the interviews with the parents were done in Spanish. Nearly all of the youth age 10–17 chose to be interviewed in English. Respondents who disclosed a situation of serious threat or ongoing victimization were re-contacted by a clinical member of the research team trained in telephone crisis counseling whose responsibility was to stay in contact with the respondent until the situation was resolved. All procedures were authorized by the University’s Institutional Review Board.

Response rates and non-response analyses

The cooperation rate (percentage of contacted respondents who completed the survey) for the RDD cross-section portion of this survey was 71 percent and the response rate (the percentage of all eligible respondents who completed the survey) was 54 percent. The cooperation and response rates associated with the smaller over-sample were somewhat lower at 63 percent and 43 percent, respectively. These are good rates by current survey research standards (Babbie, 2007; Keeter, Kennedy, Dimock, Best, & Craighill, 2006), given the steady decline in response rates that have occurred over the last three decades (Atrostic, Bates, Burt, & Silberstein, 2001) and the particular marked drop in recent years (Curtin, Presser, & Singer, 2005; Keeter et al., 2006; Singer, 2006). Although the potential for response bias remains an important consideration, several recent studies have shown no meaningful association between response rates and response bias (Curtin, Presser, & Singer, 2000; Groves, 2006; Keeter, Miller, Kohut, Groves, & Presser, 2000; Merkle & Edelman, 2002). Non-responses analysis with the current data found that respondents who refused to participate (or could not be reached), but for whom parent screener information was obtained, were not systematically different from respondents on victimization risk (details of the non-response analyses can be obtained from the authors).

Measures

Victimization. This survey used items from an enhanced version of the Juvenile Victimization Questionnaire (JVQ), an inventory of childhood victimization of a wide range of childhood victimizations (Finkelhor et al., 2011; Finkelhor, Turner, et al., 2009; Hamby et al., 2010; Turner, Finkelhor, Ormrod, 2010; Turner, Finkelhor, Ormrod, et al., 2010). The enhanced JVQ obtained reports on 48 forms of youth victimization covering five general areas of interest: conventional crime, maltreatment, victimization by peers and siblings, sexual victimization, and witnessing and indirect victimization (Finkelhor, Hamby, et al., 2005). Individual questions asking about specific types of victimizations are referred to as “screeners.” Follow-up questions for each screener gathered additional information about each victimization, including characteristics of the perpetrator, whether the event occurred in the past year, and whether weapons were used or injury resulted.

For this study, five measures created from individual and follow-up questions were constructed to capture three general types of sibling-perpetrated victimization—physical, property, and psychological. The five measures count only those experiences that occurred in the past year and that were perpetrated by a juvenile sibling residing in the same household as the selected child. Two of the measures pertain to physical victimization: *any physical assault* (was the child was hit, beaten, or attacked with or without an object and whether or not injury resulted), and *physical assault involving an object/weapon or causing injury*. Two of the measures assess property victimization: *forcible theft/taking* (“Did anyone use force to take something away from you that you were carrying or wearing?” or “Did anyone steal something from you and never give it back?”); and *vandalism* (“Did anyone break or ruin any of your things on purpose?”). The fifth measure captured whether the child had experienced *psychological victimization* by a sibling (child felt bad or scared because a sibling was “calling him/her names, saying mean things, or saying they didn’t want him/her around.”). The screener questions for property and psychological victimization were only asked of children aged two years old and older.

Demographic characteristics. Child and household information was obtained during the initial parent interview. Demographic measures included in these analyses were: *child’s gender*; *sibling’s gender* (available only for children who experienced any

past year victimization by a sibling); *child's age*; *sibling's age*; *absolute age difference between child and sibling* (coded into 4 groups: 0–1 year, 2–3 years, 4–5 years, or more than 5 years); *relative age difference between child and sibling* (coded into 7 groups: 0–1 year, sibling is: 2–3 years older, 2–3 years younger, 4–5 years older; 4–5 years younger; more than 5 years older, and more than 5 years younger); *child's race/ethnicity* (coded into 4 groups: White non-Hispanic, Hispanic any race, Black non-Hispanic, and other race, non-Hispanic); and *parent education* for parent with the most education (high school or less, some college, or college graduate). Also included was a measure of *family structure*, defined by the composition of the household and categorized into four groups: children living with: (1) two biological or adoptive parents, (2) one biological parent plus partner (spouse or non-spouse), (3) single biological parent, or (4) other adult caregiver. Finally, a dummy variable was constructed to indicate whether the parent *interview was conducted in Spanish* (0 = no; 1 = yes) as a proxy of recency of immigration to the US.

Results

Data analysis plan

The analyses focus on children and youth from two-child households currently living with a juvenile sibling between the ages of one month and 17 years old. The prevalence of any past year sibling victimization as well as the three subtypes of sibling victimization (i.e., physical, property, psychological) and their bivariate associations with individual (i.e., gender, age, race/ethnicity), sibling relationship (i.e., gender composition, age difference), and family (i.e., parent education, family structure) characteristics using chi-squared analyses, ANOVA, and comparison of confidence intervals are described. Also, logistic regression analyses were conducted to assess individual, sibling, and family characteristics as predictors of any type of sibling victimization and each subtype of sibling victimization (i.e., physical, property, and psychological) in the past year. For all multivariate models, the independent variables were child or youth gender, age, race/ethnicity, relative age difference between siblings, parent/partner's highest education level, and language of the parent interview (either Spanish or English).

Prevalence

The middle column of Table 1 entitled "All Ages" shows the prevalence of sibling victimization for all children and youth in the sample. In the previous year, 37.6% of children and youth from two-child families with a juvenile sibling in the home had experienced *at least one* incident of sibling victimization, with an average of 1.3 incidents in the past year for this group. In analyses not shown, physical victimization (32.3%; $p < .001$) was more common than was property (9.8%) and psychological (2.7%) victimization and property was more common than psychological victimizations ($p < .01$). The top right side of Table 1 shows that the prevalence of sibling victimization was highest and virtually identical for the two to five and six to nine year olds.

Although preschool and school-aged children reported the highest frequency of sibling victimization, additional analyses not shown of only those children and youth between one month to 17 years old who had experienced at least one sibling victimization in the past year revealed that the percent of incidents that included injury increased with age ($\chi^2 = 32.30$, $df = 4$, $p < .001$). Youth aged 14–17 years old had the highest rates of injury (23%) versus children aged two to five years (4%), aged six to nine years (8%) and aged 10–13 years of age (13%). Of the children and youth aged 2–17 years of age who were victimized by a juvenile sibling in the past year, 7% experienced two and 1% experienced three forms of sibling victimization (e.g., physical, property, or psychological). Although there were no gender differences in the percent reporting any incident

Table 1
Sex and age of child reporting juvenile sibling victimization in the past year.

	Sex				Age							
	N	Male (%)	Female (%)	Sig.	N	All ages (%)	0–1 (%)	2–5 (%)	6–9 (%)	10–13 (%)	14–17 (%)	Sig.
Prevalence of victimizations												
Any victimization	1,705	39.8	35.4	*	1,704	37.6	23.3	45.4	46.1	35.7	27.6	***
More than one	1,705	9.0	5.8		1,704	7.4	1.0	9.5	9.1	8.6	5.1	**
Mean # of past year incidents					1,704	.5	0.3	0.6	0.6	0.5	0.3	***
Physical (ages 1 month–17 years)												
Any assault	1,705	34.3	30.2		1,704	32.3	22.8	37.5	39.6	31.4	23.1	***
Any with weapon or injury	1,705	4.4	3.5		1,704	3.9	0.5	2.9	3.3	4.9	6.9	**
Property (ages 2–17 years)												
Any forcible taking/theft	1,511	5.0	4.7		1,510	4.8	–	12.7	4.3	0.6	0.0	***
Any vandalism	1,511	6.0	6.7		1,510	6.3	–	6.8	10.0	3.7	3.6	***
Psychological (ages 2–17 years)	1,511	3.3	2.0		1,510	2.7	–	3.9	3.6	1.7	1.2	

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

Table 2

Absolute age difference between sibling and child reporting juvenile sibling victimization in the past year.

	N	<2 years (%)	2–3 years (%)	4–5 years (%)	>5 years (%)	Sig.
Prevalence of victimizations						
Any victimization	1,705	45.3	41.2	37.2	23.7	***
More than one	1,705	12.1	8.5	5.1	4.1	**
Mean # of past year incidents	1,705	0.6	0.5	0.4	0.3	***
Physical (ages 1 month–17 years)						
Any assault	1,705	40.9	36.2	30.3	18.6	***
Any with weapon or injury	1,705	7.7	4.3	1.5	9.0	**
Property (ages 2–17 years)						
Any forcible taking/theft	1,511	5.9	6.3	3.4	1.6	*
Any vandalism	1,511	12.1	6.1	4.6	4.3	**
Psychological (ages 2–17 years)	1,511	3.6	2.5	3.2	1.6	

* $p < 0.05$.** $p < 0.01$.*** $p < 0.001$.

of sibling victimization, males did report higher rates of experiencing more than one incident of sibling victimization in the past year than did females (see Table 1).

The rate of victimization was associated with characteristics of the sibling relationship. Analyses of only those children and youth who had at least one past year sibling victimization ($n = 641$) indicated that experiencing more than one incident of sibling victimization was most common for brother–brother sibling pairs (26%; $\chi^2 = 11.30$, $df = 3$, $p < .05$) compared to other sibling dyads (brother on sister: 21%, sister on brother: 17%, and sister–sister: 12%). Sibling age difference was calculated in two ways: absolute age difference and relative age difference which takes into account whether the victim was younger or older than the perpetrator. Because there were few differences in the findings for absolute compared to relative sibling age differences, only show the results for absolute age differences are shown (see Table 2) and when the relative sibling age difference analyses offered additional information this is noted. Siblings with the smallest absolute and relative age difference were more likely to experience victimization, were more likely to have experienced more than one incident in the past year, and had the highest mean number of incidents (see Prevalence section of Table 2). Analyses of family structure differences in the prevalence (not shown) of sibling victimization were non-significant.

The logistic regression predicting any juvenile sibling victimization in the past year (see Table 3) was significant ($\chi^2 = 136.32$, $df = 17$, $p < .001$; pseudo $R^2 = .06$). The odds of children and youth reporting an incident of sibling victimization were higher for males ($z = 1.93$), for children between the ages of two and 13 (z 's ranged from 2.14 to 5.20), and for whites (versus blacks, $z = -2.20$ and Hispanics, $z = -3.05$). The odds also increased with an age difference of less than one year between siblings as compared to an age difference of more than five years with either a younger ($z = -3.79$) or older ($z = -3.87$) sibling. The odds also increased with a sibling age difference of less than one year compared to siblings with a four to five-year age gap from a younger sibling ($z = -1.99$). The odds of reporting an incident were greater if a parent had some college education ($z = 2.39$) compared to those households with a parent with a high school education or less and if the interview was given in English rather than Spanish ($z = -2.40$).

An additional logistic regression predicting the correlates of children and youth who experienced two or more incidents of sibling victimization in the past year also was significant ($\chi^2 = 63.03$, $df = 17$, $p < .001$; pseudo $R^2 = .07$). The findings were similar to the pattern of findings described above with respect to child's or youth's gender and age and parent education except that the odds of experiencing multiple sibling victimizations decreased for children aged one month to one year of age ($z = -2.26$) compared to the reference group of youth 14–17 years of age. Also, reports of two or more sibling victimizations in the past year were unrelated to race/ethnicity and the language used to conduct the interview.

In summary, the general pattern of findings from the chi-squared and multivariate analyses suggested that the frequency of experiencing victimization by a juvenile sibling in the past year was linked to several individual, sibling, and family characteristics. Specifically, sibling victimization was higher for males, whites, pre-adolescents, and those who were closer in age to their sibling. It was also higher in brother–brother pairs and among children who had a parent who attended at least some college and who conducted the interview in English. Family structure was not linked to sibling victimization. Next, the pattern of findings for the three subtypes of sibling victimization noting deviations from the overall pattern are reported on.

Physical

The category of physical victimizations for children and youth aged one month to 17 years of age was comprised of reports of any assault by a juvenile sibling and its subtype that is limited to assault with a weapon or caused injury. In summary, the pattern of findings for physical assault, but not assault with a weapon or injury, was similar to those for the overall pattern of sibling victimization. The prevalence of assault with a weapon or injury was greater for older youth aged 14–17 years of age (see Table 1) and for those who differed in age by more than five years (see Table 2). Relative age differences analysis

Table 3

Coefficients and odds ratios for logistic regression analysis of the effects of child, sibling relationship and family characteristics on reports of juvenile sibling victimization in the past year.

	Any victimization		Two or more		Any assault		Weapon/injury		Theft ^a		Vandalism ^a		Psychological	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Child sex														
Male	1.23 [*]	.13	1.65 ^{**}	.32	1.21	.13	1.38	.36	1.10	0.29	0.92	0.20	1.74	0.58
Child age (years old)														
0–1	0.86	.20	0.18 [*]	.14	1.22	.29	0.92 [*]	.09	–	–	–	–	–	–
2–5	2.22 ^{***}	.38	1.96 [*]	.62	2.21 ^{***}	.40	0.45 [*]	.17	128.71 ^{**}	219.49	1.99	0.69	4.27 [*]	2.61
6–9	2.38 ^{***}	.40	1.95 [*]	.61	2.48 ^{***}	.43	0.53	.19	43.62 [*]	74.82	2.90 ^{**}	1.00	3.32 [*]	2.01
10–13	1.46 [*]	.26	1.67	.54	1.61 ^{**}	.30	0.76	.26	5.17	9.44	0.97	0.40	1.40	0.95
Sibling relative age (years)														
2–3 older	0.88	.15	0.89	.24	0.78	.14	0.55	.20	1.79	0.67	0.52 [*]	0.16 [*]	1.20	0.57
4–5 older	0.73	.15	0.42 [*]	.15	0.56 ^{**}	.12	0.18 ^{**}	.12	0.73	0.35	0.37 ^{**}	0.15	1.15	0.60
5+ older	0.40 ^{***}	.09	0.39 [*]	.17	0.30 ^{***}	.08	0.27	.20	0.33	0.22	0.42 [*]	0.18	0.19	0.18
2–3 younger	0.77	.13	0.48 ^{**}	.14	0.77	.14	0.51 [*]	.18	0.49	0.21	0.44 ^{**}	0.14	0.35	0.21
4–5 younger	0.65 [*]	.14	0.34 ^{**}	.14	0.66	.14	0.18 ^{**}	.12	0.47	0.30	0.28 ^{**}	0.13	0.52	0.35
5+ younger	0.37 ^{***}	.10	0.24 ^{**}	.13	0.43 ^{***}	.11	0.48	.24	– ^b	–	0.17 ^{**}	0.11	0.77	0.57
Race/ethnicity														
Black	0.69	.12	0.90	.29	0.64 ^{**}	.12	0.50	.25	0.21 [*]	0.17	1.13	0.39	1.57	0.71
Hispanic	0.61 ^{**}	.10	0.61	.20	0.57 ^{**}	.10	0.91	.37	0.31 [*]	0.16	0.81	0.28	0.31	0.22
Other	1.02	.23	1.42	.53	0.86	.20	0.86	.48	0.73	0.42	0.96	0.45	1.37	0.91
Parent education														
Some college	1.43 [*]	.21	1.89 [*]	.54	1.44 [*]	.22	1.57	.59	2.73 [*]	1.00	2.07 [*]	0.68	1.83	0.82
College degree	1.28	.18	1.58	.44	1.29	.19	1.26	.46	1.87	0.74	1.67	0.53	0.99	0.45
Interview language														
Spanish	0.41 [*]	.15	1.32	.81	0.21 ^{***}	.11	0.19	.27	– ^b	–	0.86	0.64	5.14	4.62
Log likelihood (df)	–1,044.83 (17)		–414.85 (17)		–990.59 (17)		–256.81 (17)		–214.95 (14)		–333.54 (16)		–171.10 (16)	
N	1,705		1,705		1,705		1,705		1,511		1,511		1,511	

Note: SE = standard error. OR = odds ratio. For all the multivariate models, the independent variables were child sex (reference group = female), child's age group (reference group = 14–17), race/ethnicity (reference group = white, non-Hispanic), language of the interview (reference group = English), relative age difference (reference group = 0–1 years), and parent/partner's highest education level (reference group = high school or less).

^a No data for ages 0–1.

^b Age gap of 5+ years and Language of the interview predicted failure perfectly and were dropped from analysis.

^{*} $p < 0.05$.

^{**} $p < 0.01$.

^{***} $p < 0.001$.

($\chi^2 = 19.10$, $df = 6$, $p < .01$) indicated that the higher injury rates for siblings who differed in age by more than five years evident in the absolute age difference analysis were likely driven by children and youth with a sibling more than five years younger than them (5.2% for those with a younger sibling versus 1.3% for those with a sibling five years older). The findings of the logistic regressions, one predicting any physical assault and one predicting physical assault with only a weapon or injury, based on individual, sibling relationship and family predictors generally followed the overall pattern ($\chi^2 = 135.32$, $df = 17$, $p < .001$, for any physical assault; pseudo $R^2 = .07$; $\chi^2 = 42.51$, $df = 17$, $p < .001$; pseudo $R^2 = .08$, for any assault with a weapon or injury; see Table 3).

Property

Property victimizations included two subtypes: forcible taking/theft and vandalism, and analyses were conducted on those children and youth aged 2–17 years of age. The findings for property victimizations were similar to those for the overall pattern of any sibling victimization in terms of parent education and children's and youths' age but there was evidence that the property victimization subtypes had distinct relationships with other individual, sibling, and family characteristics. Property victimizations were more common for younger children but the peak ages differed by property victimization subtype (see Table 1). Chi-squared analyses showed that a smaller age difference between siblings was linked with greater incidences of both types of property victimizations (see Table 2). Although the chi-squared analyses of relative age difference showed that younger siblings reported more of each type of property victimizations than did older siblings ($\chi^2 = 31.7$, $df = 6$, $p < .001$, for forcible taking/theft; $\chi^2 = 18.9$, $df = 6$, $p < .01$, for vandalism), the multivariate analyses suggested that forcible taking/theft was unrelated to sibling relative age difference ($\chi^2 = 119.78$, $df = 14$, $p < .001$; pseudo $R^2 = .22$; $\chi^2 = 43.43$, $df = 16$, $p < .001$; pseudo $R^2 = .06$, respectively; see Table 3).

Psychological

Psychological victimization analyses were conducted on children and youth aged 2–17 years of age. The results of the psychological victimization analyses showed little in common with the overall pattern of sibling victimization (see Tables 1 and 2) and the logistic regression showed that only children's age was correlate of psychological victimization ($\chi^2 = 30.89$, $df = 16$, $p < .01$; pseudo $R^2 = .08$; see Table 3).

Discussion

In the current study, national-level data were analyzed to examine the prevalence and correlates of multiple forms of sibling victimization in the past year. Just over a third of children and youth reported being victimized by their sibling in the past year, consistent with prior work on the prevalence of sibling aggression (e.g., Finkelhor, Turner, et al., 2009). The study's comprehensive examination of sibling victimization provided information about three subtypes – physical, property, and psychological aggression – and the variability among them. Physical aggression was the most common form and the peak for all sibling victimization occurred prior to adolescence, possibly reflecting the youths' growing involvement in extra-familial relationships. However, as shown in previous work (Finkelhor et al., 2006), the rate of injury due to sibling aggression increased with age with the highest rates reported by older adolescents. It appears that while the frequency of sibling aggressive acts decreases, the severity of the acts intensifies perhaps reflecting youths' growth, physical strength, and access to weapons.

The general pattern of sibling victimization varied by several individual, sibling and family correlates. Interestingly, sibling victimization was more frequent among white than among African-American and Hispanic children. This might be explained by the idea that these subcultures have different thresholds for what is considered normal and aggressive sibling behavior (Caffaro, 2011). However, lower rates for African-Americans and Hispanics also could reflect a sub-cultural emphasis on familism that may inhibit sibling aggression (Killoren, Thayer, & Updegraff, 2008). Another possibility is that there could be systematic under-reporting due to norms of privacy or protectiveness that might operate differently across ethnic groups. The main gender differences to emerge were that brother–brother sibling pairs had the most victimization, consistent with prior studies (e.g., Goodwin & Roscoe, 1990), and males were more likely to experience multiple incidents. Such gender differences may be reflective of boys' generally greater aggression, competitiveness and sensitivity to dominance and status (Maccoby, 1998). Aggression is more common among closely-aged siblings consistent with previous research (e.g., Buhrmester, 1992; Hoffman et al., 2005). This likely reflects more opportunity for conflict among similarly aged siblings, who seek access or control over resources of common interest. But it also may be a function of increased need to establish dominance through aggression, when the hierarchy is less clearly established by differentials in size and abilities.

The analyses of parent marital status and education levels add to a very limited literature on the family correlates of sibling aggression. The findings, however, are contrary to some of the findings from smaller, non-representative samples. While reports of sibling victimization did not vary by parents' marital status, higher parental education, a proxy for socio-economic status, was linked to more incidents of sibling victimization. Although greater stability and resources are tied to lower rates of child abuse and family violence (Straus & Kantor, 1987), sibling aggression may have unique

relationship with socio-economic status. Research on affluent children shows that they are often pressed to excel to achieve individual accomplishments (Luthar & Becker, 2002) perhaps fuelling sibling antagonism and competitiveness. Alternatively, other research shows that higher socio-economic status is linked to parenting practices that emphasize positivity (Luster & Kain, 1987). Perhaps higher socio-economic parents demand more cooperative behavior among siblings and define and label aggressive behavior as a problem. As such, these parents' and youths' reports of sibling victimization may demonstrate their greater sensitivity to sibling aggression levels. Also, it is possible that more affluent parents have occupations that demand more attention and time thus limiting consistent and effective parenting of aggressive sibling relationship dynamics. A practical implication of the findings regarding the correlates of sibling victimization is for those working with families to be attuned to the differing norms of sibling victimization by culture and socio-economic status.

Although this study extends research on the prevalence and correlates of sibling aggression, it also leaves important directions for future research. One next step is to document the developmental changes in sibling victimization evident in the current study with longitudinal data. Another is to examine sibling sexual victimization. Yet another important future direction is to explore the prevalence and correlates of sibling victimization co-variation and reciprocity by equivalent information from and about all sibling pairs. Others' work suggests these are key characteristics to understanding individual mental health effects of sibling aggression (e.g., Natsuaki, Ge, Reiss, & Neiderhiser, 2009). An important limitation of this study was that information came exclusively from two-child families. Although this approach enabled us to uniquely characterize sibling dyad characteristics like birth order and gender composition, this design prevented analyses of the importance of family size and birth order position (i.e., firstborn, secondborn, etc.).

This study is one of first to employ national-level data to document the prevalence and correlates of sibling aggression for children. Although the peak of sibling aggression occurs before adolescence, few national data sets include information on children due to the difficulty of young children, in particular, being able to effectively answer such questions. This study's approach of interviewing caregivers as proxies for children younger than nine may mean incomplete data on incidents of sibling aggression. Also, the use of RDD may not capture those families who did not have a household phone and limit the generalizability of the sample. Nonetheless, the results add to a growing body of literature on aggressive sibling behavior by demonstrating the importance of taking a comprehensive approach to studying sibling victimization and considering individual, sibling, and family correlates of such behavior. Such information will be informative to future work taking a comprehensive approach to exploring the links between sibling aggression and victims' well being.

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