



January 2019

Relationships Between Sibling Physical Abuse And Lifetime Aggression Using Statistical Controls For Poly-Victimization

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RELATIONSHIPS BETWEEN EXPERIENCES OF SIBLING PHYSICAL ABUSE
AND LIFETIME AGGRESSION USING STATISTICAL CONTROLS FOR
POLY-VICTIMIZATION

by

Ani Celine Mangold
Bachelor of Arts, Texas Tech University, 2016

A Thesis

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

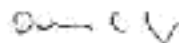
for the degree of

Master of Arts

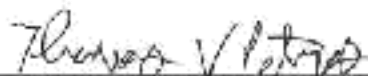
Grand Forks, North Dakota

August
2019

This thesis, submitted by Ani C. Mangold in partial fulfillment of the requirements for the Degree of Master of Arts from the University of North Dakota, has been read by the Faculty Advisory Committee under who the work has been done and is hereby approved.



Dr. Alan King, Chairperson



Dr. Thomas Petros, Committee Member



Dr. Richard Wise, Committee Member

This thesis is being submitted by the appointed advisory committee as having met all of the requirements of the School of Graduate Studies at the University of North Dakota and is hereby approved.



Chris Nelson
Associate Dean of the School of Graduate Studies

4/29/19

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Department Clinical Psychology

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Ani C. Mangold
April 8, 2019

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ACKNOWLEDGMENTS

This project would not have been possible without

-Dr. Alan King, Dr. Thomas Petros, and Dr. Richard Wise

-Dr. Christopher Mangold

-Melissa Mangold

-My emotional support animal, Gnarly

-Casey Swanson

-Melissia De La Luz

-Rebecca Bunch, Kimmy Schmidt, and Jane Villanueva

For each of you, I am sincerely grateful.

ABSTRACT

Sibling abuse, as a potential contributor to lifetime aggression, is under-represented in the childhood maltreatment literature and minimized in American society. A contemporary survey study conducted using a large college sample (King et al., 2017) established significant relationships between sibling abuse (i.e., acts of physical abuse, threats of violence, and heated verbal conflict) and a range of lifetime aggression indicators after controlling for variance attributable to physical, sexual, intimate partner, and peer abuse. The present study examined sibling physical abuse and established these same relationships using a national sample after controlling for variance due to childhood physical abuse, observed violence between parents, peer bullying, childhood emotional abuse, and childhood sexual abuse. Acts of sibling physical abuse occurring as infrequently as once a year were associated with increased conduct disorder symptoms, trait hostility, and legal consequences for acts of violence. Further, the present study drew specific attention to the heightened impact of sibling physical abuse perpetrated by a younger sibling as opposed to an older sibling in relation to conduct disorder symptoms, Buss-Perry Aggression Questionnaire subscale scores, and Lifetime Assessment of Violent Acts index scores. Overall, these results indicate that sibling physical abuse warrants careful consideration in the childhood maltreatment literature, especially if perpetrated by a younger sibling.

CHAPTER I

INTRODUCTION

Sibling abuse is an under-represented topic in the childhood maltreatment literature. This is perhaps because sibling abuse is often minimized as a normal part of growing up or incorrectly classified as sibling rivalry (Martin, 2016). Though highly prevalent in the United States and associated with severe lifetime consequences, sibling abuse has been characterized as a forgotten (Kiselica & Morrill-Richards, 2007) and hidden (Wiehe, 1997) source of trauma in childhood and adolescence. National survey data indicates that sibling violence occurs in 80% of American households and affects roughly 39 million children each year (Gelles & Straus, 1988; Straus & Gelles, 1990). Further, 66% of a high-school sample anonymously indicated having been *both* the perpetrator and the victim of sibling physical aggression in the year prior to being surveyed (Goodwin & Roscoe, 1990). More recent studies of sibling aggression also indicate prevalence rates between 33 and 88% (Tucker et al., 2013; Simonelli et al., 2002; Wolke & Skew, 2012). As aforementioned, sibling abuse is also correlated with an array of maladaptive consequences including aggression (Button & Gealt, 2010; Garcia et al., 2000; Tippett & Wolke, 2014), dating violence (Simonelli et al., 2002), delinquency (Button & Gealt, 2010), substance abuse (Wiehe, 1997), lower self-esteem (Garey, 1999; Hoffman & Edwards, 2004), mood disturbance (Stocker & Burwell, 2002), and elevated anxiety (Mackey, Fromuth, & Kelly, 2010; Martin, 2016). An experiment examining 3,599 families observed strong relationships between sibling

physical abuse and trauma symptoms after controlling for peer aggression, domestic violence, sibship size, and other confounds (Tucker et al., 2013).

Potential Co-occurring Abuse Effects

Co-occurring childhood maltreatment, often referred to as poly-victimization, has been linked to more severe forms of maladjustment (Clemmons et al., 2003; Clemmons et al., 2007). Poly-victimization has been found in one-third (Edwards et al., 2003) to two-thirds (Boxer & Terranova, 2008) of research samples (Turner et al., 2017). Stable estimates of maltreatment co-occurrence have been difficult to establish as they vary so widely by sample and measurement methodology.

It is possible to quantify co-occurrence rates through different metrics. Correlation coefficients provide dimensional estimates of maltreatment covariation. A subset of a sample of participants that experienced two or more forms of abuse are often reported. A third estimate comes from the percent of an abused cohort that was also victimized through another source. For example, CPA and interpersonal violence are found approximately 50% of the time the other is detected (McCloskey, Figueredo, & Koss, 1995). Further, 30-60% of children whose mothers are being abused are likely to be abused themselves (Appel & Holden, 1998; Edleson, 1999b), and the lifetime prevalence of child endangerment from physical abuse or domestic violence is roughly 10% in the general population (Fantuzzo & Hohr, 1999; Felitti et al., 1998; Sugaya et al., 2012; Widom, Czaja, & DuMont, 2015). Rates of sibling abuse (Kiselica & Morrill-Richards, 2007; Krienert & Walsh, 2011; Straus & Gelles, 1990; Tippett & Wolke, 2014), peer bullying (Finkelhor, Hamby, Ormrod, & Turner,

2005; Nansel et al., 2001), and exposure to rigorous corporal punishment (Gershoff, 2002; Gershoff & Bitensky, 2007; Straus & Paschall, 2009) appear somewhat higher and have prevalence rates that vary more across studies.

Child Maltreatment and Externalized Symptomatology

Child maltreatment has been studied for several decades, expanding the understanding of how variable the impacts of different types of maltreatment are on adult internalized and externalized forms of maladjustment. Internalized maladjustment can be described as experiencing negative symptoms that are focused inward (e.g., lower self-esteem and mood disturbances). External maladjustment can be described as experiencing negative symptoms that are directed outward (e.g., aggression and delinquency). Because externalized maladjustment can be directly harmful to other individuals, the present study focused on adult externalized maladjustment associated with childhood maltreatment as opposed to internalized maladjustment. A review will follow summarizing what is known regarding aggressive behavior among adults exposed to different forms of maltreatment during upbringing.

Sibling Maltreatment and Lifetime Aggression.

The current understanding of sibling maltreatment effects has been limited by the lack of empirical research published in the literature. More general sibling maltreatment findings were summarized at the outset of the literature review in the present study. The present study attempted to replicate and extend the findings of a previous study that analyzed sibling hostility in association with a range of lifetime aggression indicators (King et al., 2017). The previous study used the VEQ-R

Sibling Hostility factor score to estimate the frequency of combined acts of physical abuse, threats of violence, and heated verbal conflict using a large college sample ($N = 1,331$). Over 20% of this sample recalled more than 60 incidents of sibling hostility between the ages of 5 and 16, with more than 14% reporting prior episodes of sibling physical assault. Even acts of sibling abuse occurring as infrequently as once annually were associated with elevations in 46% of the criterion indices even after statistical controls were applied for possible co-occurring parental hostility, domestic hostility, peer hostility, sexual abuse, and participant age. The previous study also found gender differences the present study sought to replicate. Males who participated in the previous study were found to have higher rates of sibling hostility, but the relationships identified in the study were stronger and more pervasive in female participants for almost all criterion aggression indicators. Fisher z-transformation tests (Fisher, 1915; Preacher, 2002) indicated that bivariate correlation strengths between the maltreatment and aggression indices differed significantly ($p < .05$) by gender in 37% of the comparisons. Risks for inflicting at least one injury during a violent act or acts was significantly higher in women with Sibling Hostility scores greater than 5 ($p = .016$). The previous study also found family structure differences the present study sought to examine further. In the previous study, sibship size was a significant predictor of LAVA Injury to Others scores in males ($p < .001$). Larger sibships with older siblings also showed moderately elevated Sibling Hostility scores, with higher risks for families that had non-biological siblings. Akin to the previous study, the present study also examined the relational characteristics of sibships (i.e. full siblings as opposed to half or step-

siblings) as well as the relational age of the sibling perpetrators (i.e. older as opposed to younger than the victim). However, unlike the previous study, the present study only considered the size of abusive sibships as opposed to non-abusive sibships.

Child Physical Abuse and Lifetime Aggression.

Strong associations between Child Physical Abuse (CPA) and heightened aggression and criminality have been found consistently in the maltreatment literature (Fagan, 2005; Ireland, Smith, & Thornberry, 2002; Smith, Ireland, & Thornberry, 2005; Thornberry, Ireland, & Smith, 2001; Widom & Maxfield, 2001). In one specific study, researchers followed 1,000 urban adolescents from age 13 to adulthood (Smith et al., 2005). Higher levels of neglect and physical, sexual, and emotional abuse predicted drug use, violent offenses, and criminal arrest. The subset of 42 adolescents that were specifically subjected to parental physical abuse were found to exhibit early adult drug use and criminal violence. Briere and Elliott (2003) found higher levels of irritability, depression, anxious arousal, intrusive thoughts, dissociation, and impaired self-reference among 195 adult CPA victims. CPA was associated with reactive, but not proactive, aggression among boys, but not girls, in a sample of 397 emotionally disturbed children (Ford, Fraleigh, & Conner, 2010). Moe, King, and Bailly (2004) found higher rates of lab-provoked retaliatory aggression among college men with histories of CPA. Histories of CPA also predicted both physical and relational aggression among 410 inner-city day-camp participants (Cullerton-Sen et al., 2008).

Exposure to Intimate Partner Violence and Lifetime Aggression.

An estimated 25% of American women and 14% of American men are

assaulted by a romantic partner at some point in their lives, resulting in roughly two million injuries and 1,300 deaths each year (Breiding, Black, & Ryan, 2008). Approximately 80% of these assaults are observed by the children who live in these high-risk home environments (Jaffe, Wolfe, & Wilson, 1990). Perpetrators of domestic violence have been found to be disproportionately represented by adults who witnessed similar acts as children (Malik, Sorenson, & Aneshensel, 1997; O'Leary, Malone, & Tyree, 1994; Riggs, O'Leary, & Breslin, 1990). Associations between childhood exposure to domestic violence and symptoms of maladjustment (e.g., aggression, peer bullying, rule-breaking, and relationship maintenance) were found in multiple studies (Bauer et al., 2006; Edleson, 1999a; Holtzworth et al., 1997; Lundy & Grossman, 2005; Margolin, 1998; Peled & Davis, 1995). A balanced literature review points to an array of modulating factors such as the quality of parent-child attachment (Wekerle & Wolfe, 1998), family conflict and hostility levels (Andrews et al., 2000), deviant peer associations (Capaldi et al., 2001), patterns of substance abuse (Simons, Lin, & Gordon, 1998), levels of delinquency (Ehrensaft et al., 2003), and other factors that are relevant in differentiating between negative and statistically insignificant, or even adaptive, outcomes of exposure to domestic violence and other forms of childhood maltreatment (Holt, Buckley, & Whelan, 2008; Linder & Collins, 2005; Suzuki, Geffner, & Bucky, 2009).

Peer Bullying and Lifetime Aggression.

Meta-analytic research has formed associations between peer bullying and externalized symptoms of maladjustment (Reijntjes et al., 2011). A particular longitudinal analysis (Sigurdson, Wallander, & Sund, 2014) found that bullied youth

from a representative community sample ($N=2,464$) exhibited significantly higher levels of maladjustment (e.g., lower education levels, higher vocational lapses, relationship difficulties, lower adaptive functioning, tobacco use, illegal drug use, and poorer health) between the ages of 26 and 27. Studies have also found that victims of relational aggression are at a similar or higher risk of mood disturbance and suicide (Fite et al., 2011; Prinstein, Boergers, & Vernberg, 2001).

Child Sexual Abuse and Lifetime Aggression.

Child Sexual Abuse (CSA) has been associated with higher prevalence rates for an array of psychiatric symptoms including anxiety, depression, suicidal behavior, and substance abuse (Fergusson, Horwood, & Lynskey, 1996). CSA has also been associated with subsequent sexual aggression in both longitudinal studies (Feiring, Simon, & Cleland, 2009; Krahe & Berger, 2017) and studies conducted in laboratories (Davis et al., 2012). A recent study found that internalized and externalized symptoms associated with CSA may be partially mediated by adverse changes in personality traits (e.g., antagonism, negative affectivity, and disinhibition) during development (Veith, Russell, & King, 2017).

Rationale for the Current Study

The survey used in the present study provides estimates for the prevalence of sibling physical abuse, childhood physical abuse, childhood sexual abuse, observed violence between parents, peer bullying, and childhood emotional abuse co-occurrences in the United States. An attempt was made to replicate the correlational findings between sibling physical abuse and lifetime aggression indicators as well as the gender differences in these strengths (King et al., 2017). More specific family

structure effects were also examined. The predictive validity of the VEQ-R risk classification thresholds (King & Russell, 2017) for Sibling Physical Abuse (Elevated, Sibling Hostility > 5; Moderate, Sibling Hostility = 1.00 to 5.00; and No Risk, Sibling Hostility = 0) were examined as well.

CHAPTER II

METHOD

Participants

This sample ($N=916$) consisted of participants over the age of 18 living in the United States. Informed consent was required for all participants before they were granted access to the Qualtrics survey that was institutionally reviewed at the University of North Dakota. Participants accessed the Qualtrics survey through Amazon's Mechanical Turk (Mturk) and were compensated \$0.50 for their participation. Mturk has received favorable external reviews as a valid and representative crowdsourcing resource for various types of research projects (Buhrmester, Kwan, & Gosling, 2011; Paolacci et al., 2010). This sample varied in gender (F , 60.5%; M , 39.5%), age ($M=38.25$; $SD=13.23$) and ethnicity (*Caucasian*, 78.6%; *Black or African American*, 6%; *Asian American*, 6.7%; *Hispanic or Latinx*, 4.9%; *American Indian or Alaskan Native*, 0.7%; *biracial*, 2.7%; and *other*, 0.4%) and resembles the demographic makeup of the United States (*Caucasian*, 76.6%; *Black or African American*, 13.4%; *Asian American*, 5.8%; *Hispanic or Latinx*, 18.1%; *American Indian or Alaskan Native*, 0.6%; and *biracial*, 2.7%) aside from the underrepresentation of Hispanic participants (United States Census Bureau, 2017). This sample excluded 184 (16.7%) participants who failed to meet the Lifetime Assessment of Violent Acts (LAVA) consistency criterion (described below), the Violent Experiences Questionnaire— Revised (VEQ-R) consistency criterion (described below), and one additional validity criterion.

Materials

Violent Experiences Questionnaire— Revised.

The Violent Experiences Questionnaire— Revised (VEQ-R; King & Russell, 2017) was presented to participants to obtain an estimation of how frequently they recalled experiencing various types of childhood maltreatment between the ages of 5 and 16. The VEQ-R uses operational definitions of maltreatment made distinguishable based on the perpetrator of the abuse (i.e., siblings, parents, peers, and domestic violence) and the nature of the abuse (e.g., verbal conflict, threats of violence, and physical acts). For example, the Sibling Physical Abuse (SPA) index provides an estimate of the frequency with which physical acts were directed toward the participant by “a sibling, half-sibling, or step-sibling” between the ages of 5 and 16 (e.g., Physical Acts with or without Physical Injury: pushing, shoving, shaking, striking, kicking, punching, beating, burning, or use of a weapon to inflict pain or injury). Each index score is interpreted as the average number of days a specific behavior occurred in the 12-year recollection period. VEQ-R scores range from 0 to 104 as measured by a descriptive frequency index (never happened; happened only once; happened only twice; happened less than four times; happened about once a year; happened about twice a year; happened about once a month; happened about once a week; happened more than once a week). For example, a SPA score of 2 indicates that at least one of the physical abuse index acts was experienced, on average, twice a year in the 12-year recollection period (i.e., 24 total acts, experienced twice a year, on average). The same procedure generates frequency estimates for the Childhood Physical Abuse (CPA), Peer Bullying (BULL), Observed Parental Violence (OPV), and Childhood Emotional Abuse (CEA) subscales. The factor structure and other

psychometric properties of the VEQ-R have been derived using both college and national samples (King & Russell, 2017). Further, certain VEQ-R maltreatment indices have predicted an array of maladjustment indicators (Green & King, 2009; King, 2014ab; King, 2016; Moe, King, & Bailly, 2004; Mugge, Chase, & King, 2016; Mugge, King, & Klophaus, 2009; Russell, Veith, & King, 2015; Veith et al., 2017; Walter & King, 2013). Exposure to high frequency Sibling Physical Abuse (SPA > 10) has been associated with heightened risks for past criminal arrest ($RR = 3.86$; King 2014a), threatening another with homicide ($RR = 17.0$; King, 2014a), and trait disinhibition (Russell et al., 2015).

Research on maltreatment often relies on a combination of dimensional and categorical analyses which recognize that the adverse effects of abuse may become more distinct at distribution extremes. A VEQ-R classification model was advanced using the 90th percentile of the normative national distribution as the operational definition of “high-risk” (score thresholds differed by index; King & Russell, 2017). This statistical standard was based on national prevalence rates for the most severe forms of abuse. This high-risk threshold was supplemented by raw score thresholds of 5 (Elevated Risk) and 1 (Moderate Risk) which were used in previous VEQ-R validation studies. While college students rarely breached the high-risk threshold, Elevated and Moderate risk groups were readily formed. Acceptable test-retest reliabilities (occurring after one week) for Elevated and Moderate risk classifications were formed using a normative college sample.

Sexual Abuse & Assault Self-Report.

Childhood Sexual Abuse (CSA), occurring before the age of 16, was measured with a custom self-report index based on the structured interview format used in the Consortium of Longitudinal Studies on Child Abuse and Neglect (LONGSCAN) project

that originated at the University of North Carolina (Knight et al., 2008). The format of the structured interview was originally intended for sexually victimized children and adolescents. Therefore, certain terms were adapted for adult self-report sampling purposes (e.g., “genitalia” instead of “sexual parts” and “rape” instead of “put a part of [their] body inside your private parts”). LONGSCAN provides extensive concurrent validation data.

Buss-Perry Aggression Questionnaire.

The BPAQ (Buss & Perry, 1992; Buss & Warren, 2000) is a 29-item measure that was used to generate four subscales to estimate participants’ Trait Aggression, Verbal Aggression, Trait Anger, and Trait Hostility. Items on the BPAQ openly inquire about the concepts they measure (e.g., Trait Aggression: “Once in a while I can’t control the urge to strike another person” and Trait Hostility: “I wonder why sometimes I feel so bitter about things”). Subscale reliabilities range from .72 to .89 with extensive validation evidence provided in several peer-reviewed research articles (Archer & Webb, 2006; Gerevich, Bacskai, & Czobor, 2007; O’Connor, Archer, & Wu, 2001).

Lifetime Assessment of Violent Acts.

The Lifetime Assessment of Violent Acts (King, Russell, & Bailly, 2017) is a retrospective self-report inventory used to describe prior acts of physical aggression and the antecedent circumstances and consequences associated with those lifetime incidents. The present study relied on five of the LAVA indices— the Lifetime Aggressive Acts (LAGG) index, the Injury to Others (ITO) index, the Trouble Due to Violent Acts (TVA) index, the Lethal Acts of Aggression (LETHAL) index, and the Motivated Acts (MA) index. LAGG scores total the participants’ estimates of the number of times in their lives

they engaged in acts of physical aggression. ITO scores are calculated by taking the sum total of physical ailments (i.e., head or facial injury, brain injury, broken bone, internal injury, superficial cut, deep cut, bruise, black eye, loss of consciousness, ambulance call, emergency room treatment, or hospitalization) inflicted on another person or people during the most recent, second most recent, third most recent, fourth most recent, and fifth most recent acts of violence. ITO scores can range from 0 to 60 (5 acts x 12 injuries). TVA scores range from 0 to 6 (“Have you ever been in trouble because of violent behavior?” 0=no; 1=once; 2= twice; 4=three to five times; 6=> five times). LETHAL scores are calculated by taking the sum of lethal acts of aggression (i.e., threatening to kill someone, threatening to use a weapon against someone, and using a weapon against someone) that occurred during the most recent, second most recent, third most recent, fourth most recent, and fifth most recent acts of violence. The MA index identifies circumstances associated with up to five separate, previous acts (e.g., reactions to slights, intimate partner conflict, alcohol intoxication, and lethal intent). The MA triggers and/or extenuating circumstances are also grouped into dimensional factor scores that included the number of past “reactive” acts (e.g., responses to perceived provocation such as “I felt personally insulted,” “I felt verbally or physically harassed,” and “I felt threatened with physical harm to self or others”) selected to be included in the present study. Test-retest reliability (one week) estimates were provided by the test developers using their normative college sample (LAGG, $r = .71$; ITO, $r = .83$; Reactive, $r = .73$).

LAVA and VEQ-R Exclusion Criteria.

The LAGG index of the LAVA is an essential measure in the present study and therefore must be completed. Participant data was excluded from the sample if participants failed to comply with this standard.

Procedure

The present study analyzed relationships between sibling maltreatment, trait hostility, and lifetime aggression. Bivariate correlation coefficients were calculated between sibling maltreatment indicators and criterion aggression indices. Regression analyses were performed to determine if sibling maltreatment indicators accounted for any distinct variance not associated with other forms of abuse. The predictive validity of the relational ages and familial structure of the perpetrator and victim were analyzed in the present study. Analyses of Covariance were performed to account for the potential effects of co-occurring forms of maltreatment. The predictive validity of the VEQ-R risk classifications was also analyzed in the present study. Analyses of Covariance were performed to account for the potential effects of participant age as well as co-occurring forms of maltreatment.

CHAPTER III

RESULTS

Descriptive Statistics

Table 1 provides descriptive statistics for each maltreatment predictor and externalized symptom index. There were significant gender differences for CPA, CEA, and CSA maltreatment predictors. Scores among females in this sample were higher on all three maltreatment predictors (effect sizes in far right column). Aside from BPAQ Trait Hostility, there were significant gender differences on each externalized symptom index. Scores among males in this sample were higher on each externalized symptom index (effect sizes in far right column). Participants reported an average of 5 incidents of SPA per year over the 12-year recording period with 8% of participants reporting more than 20 total incidents of SPA per year over the 12-year recording period.

LAVA subscale scores among this national sample were variable. Exactly 24% of participants ($n=336$) reported lifetime ITO, with 8.2% reporting more than five lifetime physical injuries to others and over 6% reporting more than ten lifetime physical injuries to others. The physical injuries to others reported by participants who indicated ITO scores greater than zero were of high consequence (e.g., “deep cuts,” 9.2%; “head or facial injuries,” 12.7%; “broken bones,” 9.7%; “internal injuries,” 7.4% “loss of consciousness,” 8.1%; “ambulance calls,” 7.4%; “emergency room treatment,” 8.8%; and “hospitalization,” 6.3%). Being threatened with physical harm, verbal and/or physical harassment, and feeling personally insulted were the most highly reported catalysts for prior violent acts.

Table 1.

Descriptive Statistics for Predictor and Criterion Variables in the National Sample

	Females	Males	Total National Sample			Gender	
	<i>n</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>p</i>	<i>d</i>
Maltreatment Predictors							
Sibling Physical Abuse	552	361	5.33	16.53	0-104		
Childhood Physical Abuse	545	353	6.96	19.75	0-104	**	.56
Observed Parental Violence	549	358	4.14	15.29	0-104		
Peer Bullying	546	354	10.21	21.76	0-104		
Childhood Emotional Abuse	537	342	14.95	21.64	0-104	**	.20
Childhood Sexual Abuse	448	304	1.89	4.06	0-20	*	.15
Externalized Symptom Indices							
Conduct Disorder Symptoms	520	328	1.48	2.35	0-15	***	.33
BPAQ Trait Aggression	508	327	19.69	7.90	9-45	***	.46
BPAQ Verbal Aggression	522	335	12.58	4.52	5-25	**	.24
BPAQ Trait Anger	510	337	15.04	5.94	7-35	*	.17
BPAQ Trait Hostility	522	336	18.39	7.99	8-4		
LAVA Lifetime Aggression	552	361	2.38	3.09	0-1	**	.23
LAVA Injury to Other	552	361	1.62	3.44	0-25	***	.39
LAVA Trouble Due to Violent Acts	551	358	.55	1.24	0-6	***	.31
LAVA Reactive Acts	552	361	1.22	2.03	0-15	***	.28

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 2 depicts the distribution of LAVA LETHAL scores and ITO scores. Of each indication of lifetime aggression measured in the present study, LETHAL and ITO have the most detrimental consequences. Therefore, risk analyses were conducted to assess the extent to which SPA scores greater than 5 appeared to elevate the likelihood of threatening to kill a victim, threatening to use weapons against a victim, or actually using weapons against a victim during a past violent act. While a threshold of 5 appears low, and only 13% of participants in this sample experienced an average of more than five acts of sibling physical abuse per year, SPA was found to be as high as 104 incidents a year for 11 participants in this sample. SPA was found to elevate the risk of LETHAL (> 0) among males ($RR=2.29$, 95% CI [1.32, 3.96] $p < .01$) but not females ($RR=1.76$, 95% CI [.83, 3.72] $p = .13$), in this sample. Risk analyses were also conducted to assess the extent to which SPA scores greater than 5 appeared to elevate the likelihood of inflicting one or more injuries on a victim during a past violent act. SPA was found to elevate the risk of ITO (> 0) among males ($RR=1.42$, 95% CI [1.11, 1.82] $p < .01$) and females ($RR=1.44$, 95% CI [1.06, 1.96] $p < .05$), in this sample.

Table 2.

Lifetime Assessment of Violent Acts (LAVA) Subscale and Component Score Frequency Distributions

Score	Lava Subscales				LAVA Motive Cluster Scores			
	LAGG	MA	ITO	TVA	LETHAL	REACTIVE	IPV	ALCOHOL
0	43.3%	76.8%	63.3%	76.8%	90.4%	52.2%	71.7%	84.1%
1	8.7%	8.8%	12.7%	8.8%	2%	16.7%	10.7%	5.7%
2	13.3%	7.7%	6.1%	7.7%	1.5%	13.6%	6.6%	2.2%
3	9.9%	5.0%	4.0%		5.5%	10.8%	8.1%	5.8%
4	4.6%	1.8%	1.5%	5.0%	.2%	2.1%	1.0%	.8%
5	7.1%	7.8%	3.3%		.1%	1.6%	.7%	.7%
6	1.9%		.9%	1.8%	.2%	1.0%	.2%	.2%
7	.7%		.8%			.1%	.2%	.1%
8	.7%		.5%			.1%	.1%	.3%
9	.3%		.2%				.1%	
10	9.5%		.1%		.1%	.7%	.3%	.2%
11			.4%			.3%		
12			3.6%			.1%	.1%	
13			1.4%				.1%	
14			.2%					
≥15			.8%			.7%	.1%	

National Sample $n=916$

Table 3 data demonstrates the ubiquitous nature of the relationships between the maltreatment and aggression indices. Fisher z -transformation tests (Fisher, 1915; Preacher, 2002) indicated that bivariate correlation strengths differed significantly ($p < .05$) by gender in roughly one-fourth of the comparisons (as indicated by shaded values). There were no significant gender differences for SPA. Further analyses of bivariate correlations between SPA, CPA, OPV, BULL, CEA, and CSA predictors showed notably high correlations between SPA and CEA ($r=.479$), CPA and CEA ($r=.550$), and CPA and OPV ($r=.522$).

Table 3.

Bivariate Correlation Matrix of Maltreatment and Aggression Index Indicators by Gender

Aggression Indices	Sibling Physical Abuse	Childhood Physical Abuse	Observed Parental Violence	Peer Bullying	Childhood Emotional Abuse	Childhood Sexual Abuse
Females						
Conduct Disorder Symptoms	.20**	.23**	.11*	.17**	.15**	.44**
BPAQ Trait Aggression	.12**	.14**	.14**	.20**	.18**	.30**
BPAQ Verbal Aggression	.08	.05	.05	.12**	.13**	.18**
BPAQ Trait Anger	.03	.08	.02	.13**	.10*	.23
BPAQ Trait Hostility	.12**	.10*	.17**	.11*	.23**	.23**
LAVA Lifetime Aggression	.07	.14**	.07	.22**	.20**	.21**
LAVA Injury to Others	.10*	.23**	.15**	.07	.07	.60**
LAVA Trouble Due to Violent Acts	.11**	.18**	.11*	.18**	.11*	.25**
LAVA Reactive Acts	.12**	.13**	.14**	.12**	.16**	.29**
Males						
Conduct Disorder Symptoms	.20**	.24**	.35**	.04	.18**	.55**
BPAQ Trait Aggression	.04	.11	.18**	.13*	.08	.22**
BPAQ Verbal Aggression	.02	.06	.12*	.09	.13*	.11
BPAQ Trait Anger	.04	.08	.15**	.12*	.08	.26**
BPAQ Trait Hostility	.01	.12*	.13*	.25**	.12*	.19**
LAVA Lifetime Aggression	.14**	.24**	.20**	.24**	.22**	.15**
LAVA Injury to Others	.16**	.15**	.33**	.13*	.11*	.52**
LAVA Trouble Due to Violent Acts	.21**	.31**	.37**	.21**	.22**	.50**
LAVA Reactive Acts	.13*	.34**	.30**	.16**	.21**	.24**

Shaded blocks designate significant gender differences in coefficient strength; * $p < .05$ ** $p < .01$ *** $p < .001$

Table 4 depicts a series of 2 (Gender) x 3 (Relational Age of Perpetrator) Analyses of Covariance used to test the predictive value of the relational age of the perpetrator to the victim of sibling physical abuse. Variance accounted for by co-occurring abuse was controlled in each analysis. The Gender by Relational Age of Perpetrator group classification was statistically significant for Conduct Disorder Symptoms ($F=2.84, p < .05$), LAVA ITO ($F=7.95, p < .001$), and LAVA TVA ($F=11.43, p < .001$), but the rest of the results were aggregated across gender. Sibling physical abuse perpetrated by a younger sibling was associated with significant elevations in nine of the criterion indices (Conduct Disorder Symptoms, BPAQ Trait Aggression, BPAQ Trait Anger, BPAQ Trait Hostility, LAVA LAGG, LAVA ITO among males, LAVA TVA among males, and LAVA REACT). Sibling physical abuse perpetrated by an older sibling was associated with significant elevations in three of the criterion indices (Conduct Disorder Symptoms among females, LAVA LAGG, and LAVA ITO among males). There were significant differences between the relational age of the perpetrator to the victim of sibling physical abuse for one criterion index (LAVA ITO among males).

Table 4.

Relational Age of Perpetrator Analyses of Covariance on Criterion Indices

Indicators	Perpetrator-None			Perpetrator-Younger Sibling			Perpetrator-Older Sibling			Familial Structure Significance	
	<i>M</i>	<i>SE</i>	<i>n</i>	<i>M</i>	<i>SE</i>	<i>n</i>	<i>M</i>	<i>SE</i>	<i>n</i>	<i>F</i>	η_p^2
Conduct Disorder Symptoms-F	.88 ^a	.09	282	1.43 ^b	.22	48	1.55 ^b	.18	74	6.69 ^{***}	.033
Conduct Disorder Symptoms-M	1.50 ^a	.16	165	2.79 ^b	.34	37	2.22	.27	56	6.48 ^{**}	.049
BPAQ Trait Aggression	19.44 ^a	.36	443	22.11 ^b	.80	85	20.32	.64	129	4.59 [*]	.014
BPAQ Verbal Aggression	12.61	.22	448	13.05	.48	89	12.68	.38	134	.35	.001
BPAQ Trait Anger	14.72 ^a	.28	446	16.68 ^b	.62	87	14.76	.50	132	4.08 [*]	.012
BPAQ Trait Hostility	17.89 ^a	.37	453	20.05 ^b	.82	89	18.41	.67	131	2.78	.008
LAVA Lifetime Aggression	2.17 ^a	.14	466	3.35 ^b	.32	91	3.01 ^b	.26	137	7.64 ^{***}	.022
LAVA Injury to Others -F	.82	.11	290	1.00	.26	52	.81	.21	77	.20	.001
LAVA Injury to Others-M	1.44 ^a	.23	176	3.80 ^b	.52	39	2.43 ^c	.42	60	9.26 ^{***}	.065
LAVA Trouble Due to Violent Acts-F	.39	.06	290	.29	.13	52	.31	.11	77	.35	.002
LAVA Trouble Due to Violent Acts-M	.62 ^a	.09	176	1.38 ^b	.21	39	.86	.16	59	5.53 ^{**}	.040
LAVA Reactive Aggression	1.10 ^a	.10	466	2.07 ^b	.22	91	1.44	.18	137	8.29 ^{***}	.024

Cell differences designated by letters. * $p < .05$ ** $p < .01$ *** $p < .001$

Table 5 depicts a series of 2 (Gender) x 4 (Familial Structure) Analyses of Covariance used to test the predictive value of the familial relationship between the perpetrator and victim of sibling physical abuse. Variance accounted for by co-occurring types of abuse was controlled in each analysis. The Gender by Familial Structure group classification was statistically significant for SPA ($F=5.51, p < .001$), Conduct Disorder Symptoms ($F=3.06, p < .05$), LAVA ITO ($F=4.45, p < .01$), and LAVA TVA ($F=7.63, p < .001$), but the rest of the results were aggregated across gender. Sibling physical abuse perpetrated by full-siblings elevated scores for seven criterion indices (Conduct Disorder Symptoms, BPAQ Trait Aggression, LAVA LAGG, LAVA ITO among males, LAVA TVA among males, and LAVA REACT). Sibling physical abuse perpetrated by half-siblings elevated scores for two criterion indices (Conduct Disorder Symptoms among females, and LAVA ITO among females). Sibling physical abuse perpetrated by step-siblings elevated scores for one criterion index (LAVA ITO among males).

Table 5.

Sibling Structure Analyses of Covariance on Criterion Indices

Indicators	No Abusive Sibling			Abusive Full-Sibling			Abusive Half-Sibling			Abusive Step-Sibling			Familial Structure Effects	
	<i>M</i>	<i>SE</i>	<i>n</i>	<i>M</i>	<i>SE</i>	<i>n</i>	<i>M</i>	<i>SE</i>	<i>n</i>	<i>M</i>	<i>SE</i>	<i>n</i>	<i>F</i>	<i>n_p²</i>
Conduct Disorder Symptoms-F	.92 ^a	.93	279	1.41 ^b	1.38	92	2.05 ^b	.35	23	1.11	.62	6	4.48 ^{**}	.033
Conduct Disorder Symptoms-M	1.56 ^a	.17	164	2.47 ^b	.24	77	2.62	.70	11	2.95	.89	6	3.70 [*]	.042
BPAQ Trait Aggression	19.56 ^a	.36	439	21.04 ^b	.57	170	19.76	1.47	32	19.76	1.96	14	1.63	.008
BPAQ Verbal Aggression	12.56	.22	443	13.08	.33	177	11.88	.87	35	12.25	1.17	14	.92	.004
BPAQ Trait Anger	14.78	.28	440	15.55	.43	175	13.57	1.09	37	15.35	1.63	12	1.39	.006
BPAQ Trait Hostility	18.00	.37	450	19.15	.58	173	17.52	1.48	35	17.28	2.11	13	1.10	.005
LAVA Lifetime Aggression	2.17 ^a	.14	462	3.18 ^b	.22	181	2.51	.57	37	2.63	.80	14	4.75 ^{**}	.020
LAVA Injury to Others-F	.85 ^a	.11	287	.77	.20	96	2.24 ^b	.41	26	1.45	.76	6	3.83 [*]	.027
LAVA Injury to Others-M	1.68 ^a	.25	175	3.04 ^b	.36	85	2.61	1.05	11	4.50 ^b	1.18	8	4.27 ^{**}	.045
LAVA Trouble Due to Violent Acts-F	.39	.06	287	.20	.10	96	.72	.20	26	.19	.37	6	2.23	.016
LAVA Trouble Due to Violent Acts-M	.65 ^a	.10	175	1.12 ^b	.14	84	.63	.40	11	1.47	.45	8	3.30 [*]	.036
LAVA Reactive Aggression	1.12 ^a	.10	462	1.77 ^b	.15	181	1.21	.39	37	1.63	.54	14	4.53 ^{**}	.020

Cell differences designated by letters. * $p < .05$ ** $p < .01$ *** $p < .001$

Table 6 depicts the results of a general linear regression that used participant age and co-occurring types of abuse to predict BPAQ criterion measures. Male and female participants were tested separately in each analysis. The predictive model for Conduct Disorder Symptoms was significant for females ($F= 16.47$; $p < .001$; Adjusted $R^2 = .202$; $SE= 1.68$) and males ($F= 19.63$; $p < .001$; Adjusted $R^2 = .315$; $SE= 2.37$). The predictive model for BPAQ Trait Aggression scores was significant for females ($F= 10.61$; $p < .001$; Adjusted $R^2 = .137$; $SE= 7.08$) and males ($F= 3.32$; $p < .01$; Adjusted $R^2 = .054$; $SE= 7.57$). The predictive model for BPAQ Trait Hostility scores was significant for females ($F= 12.04$; $p < .001$; Adjusted $R^2 = .152$; $SE= 7.40$) and males ($F= 5.39$; $p < .001$; Adjusted $R^2 = .096$; $SE= 7.49$).

Table 6.

Regression Prediction Models for Conduct Disturbance and Selected BPAQ Subscales

	Standardized Coefficient				Significance Testing			
	Beta		SE		t		P	
	Females	Males	Females	Males	Females	Males	Females	Males
Conduct Disorder Symptoms Prior to Age 15								
Age	-.05	.00	.01	.01	-1.08	-.01	.28	.99
Sibling Physical Abuse	.07	.03	.01	.01	1.33	.49	.18	.62
Childhood Physical Abuse	.10	.02	.01	.01	1.80	.34	.07	.74
Observed Parental Violence	-.03	.14	.01	.02	-.51	2.10	.61	.04
Peer Bullying	.06	-.05	.00	.01	1.37	-.98	.17	.33
Childhood Sexual Abuse	.00	.06	.01	.01	-.04	.98	.97	.33
Childhood Emotional Abuse	.38	.48	.02	.04	8.23	9.04	.00	.00
BPAQ Trait Aggression								
Age	-.15	-.08	.03	.04	-3.18	-1.36	.00	.18
Sibling Physical Abuse	-.05	-.05	.02	.04	-.94	-.77	.35	.45
Childhood Physical Abuse	.05	.00	.02	.04	.75	-.01	.46	.99
Observed Parental Violence	.06	.11	.02	.05	1.13	1.37	.26	.18
Peer Bullying	.14	.10	.02	.02	2.97	1.56	.00	.12
Childhood Sexual Abuse	.13	.00	.02	.03	1.97	.01	.05	.99
Childhood Emotional Abuse	.26	.18	.09	.12	5.37	2.79	.00	.01
BPAQ Trait Hostility								
Age	-.17	-.15	.03	.03	-3.73	-2.61	.00	.01
Sibling Physical Abuse	-.08	-.08	.02	.04	-1.42	-1.23	.16	.22
Childhood Physical Abuse	-.13	.05	.02	.04	-2.13	.63	.03	.53
Observed Parental Violence	-.02	.00	.03	.05	-.32	.02	.75	.98
Peer Bullying	.13	.23	.02	.02	2.75	3.92	.01	.00
Childhood Sexual Abuse	.26	.03	.02	.03	4.21	.43	.00	.67
Childhood Emotional Abuse	.24	.15	.10	.12	5.10	2.46	.00	.01

Note: Results for males and females were derived from independent model testing. Pairwise exclusions were used for missing data.

Table 7 depicts the results of a general linear regression that used participant age and co-occurring types of abuse to predict LAVA criterion measures. Male and female participants were tested separately in each analysis. The predictive model for LAGG scores was significant for females ($F=8.46$; $p < .001$; Adjusted $R^2 = .107$; $SE= 2.79$) and males ($F=5.38$; $p < .001$; Adjusted $R^2 = .096$; $SE= 3.10$). The predictive model for ITO scores was significant for females ($F=38.33$; $p < .001$; Adjusted $R^2 = .374$; $SE= 2.08$) and males ($F=17.49$; $p < .001$; Adjusted $R^2 = .285$; $SE= 3.59$). The predictive model for TVA scores was significant for females ($F=9.04$; $p < .001$; Adjusted $R^2 = .114$; $SE= .95$) and males ($F=19.12$; $p < .001$; Adjusted $R^2 = .305$; $SE= 1.24$). The predictive model for REACT scores was significant for females ($F= 7.91$; $p < .001$; Adjusted $R^2 = .099$; $SE= 1.78$) and males ($F= 7.77$; $p < .001$; Adjusted $R^2 = .141$; $SE= 2.04$).

Table 7.

Regression Prediction Models for Selected LAVA Indices

	Standardized Coefficient				Significance Testing			
	Beta		SE		t		p	
	Females	Males	Females	Males	Females	Males	Females	Males
Lifetime Aggression								
Age	-.10	.05	.01	.01	-2.25	.96	.03	.34
Sibling Physical Abuse	-.12	.04	.01	.02	-2.21	.70	.03	.48
Childhood Physical Abuse	.01	.15	.01	.02	.12	2.04	.90	.04
Observed Parental Violence	-.04	-.01	.01	.02	-.79	-.12	.43	.90
Peer Bullying	.18	.18	.01	.01	3.70	3.13	.00	.00
Childhood Sexual Abuse	.21	.09	.01	.01	3.32	1.34	.00	.17
Childhood Emotional Abuse	.18	.09	.04	.05	3.68	1.49	.00	.14
LAVA Injury to Others								
Age	-.10	-.06	.01	.02	-2.54	-1.27	.01	.20
Sibling Physical Abuse	-.03	.01	.01	.02	-.70	.19	.48	.85
Childhood Physical Abuse	.10	-.08	.01	.02	1.86	-1.19	.06	.24
Observed Parental Violence	.07	.20	.01	.02	1.51	2.94	.13	.00
Peer Bullying	-.03	.06	.00	.01	-.64	1.09	.52	.28
Childhood Sexual Abuse	-.07	-.02	.01	.01	-1.35	-.25	.18	.81
Childhood Emotional Abuse	.58	.45	.03	.06	14.23	8.30	.00	.00
LAVA Trouble Due to Violent Acts								
Age	-.20	-.02	.00	.01	-4.30	-.38	.00	.71
Sibling Physical Abuse	.02	.04	.00	.01	.30	.71	.77	.48
Childhood Physical Abuse	.12	.12	.00	.01	1.94	1.94	.05	.05
Observed Parental Violence	.02	.09	.00	.01	.29	1.30	.77	.20
Peer Bullying	.14	.12	.00	.00	2.81	2.42	.01	.02
Childhood Sexual Abuse	-.05	.04	.00	.01	-.72	.61	.47	.55
Childhood Emotional Abuse	.18	.42	.01	.02	3.67	7.79	.00	.00
LAVA Reactive Aggression								
Age	-.10	-.08	.01	.01	-2.10	-1.39	.03	.17
Sibling Physical Abuse	-.01	-.01	.01	.01	-.24	-.12	.81	.90
Childhood Physical Abuse	-.04	.23	.01	.01	-.61	3.29	.54	.00
Observed Parental Violence	.06	.07	.01	.01	1.15	.99	.25	.32
Peer Bullying	.06	.09	.00	.01	1.14	1.59	.26	.11
Childhood Sexual Abuse	.10	.03	.01	.01	1.60	.52	.11	.61
Childhood Emotional Abuse	.27	.14	.02	.03	5.41	2.31	.00	.02

Note: Results for males and females were derived from independent model testing. Pairwise exclusions were used for missing data.

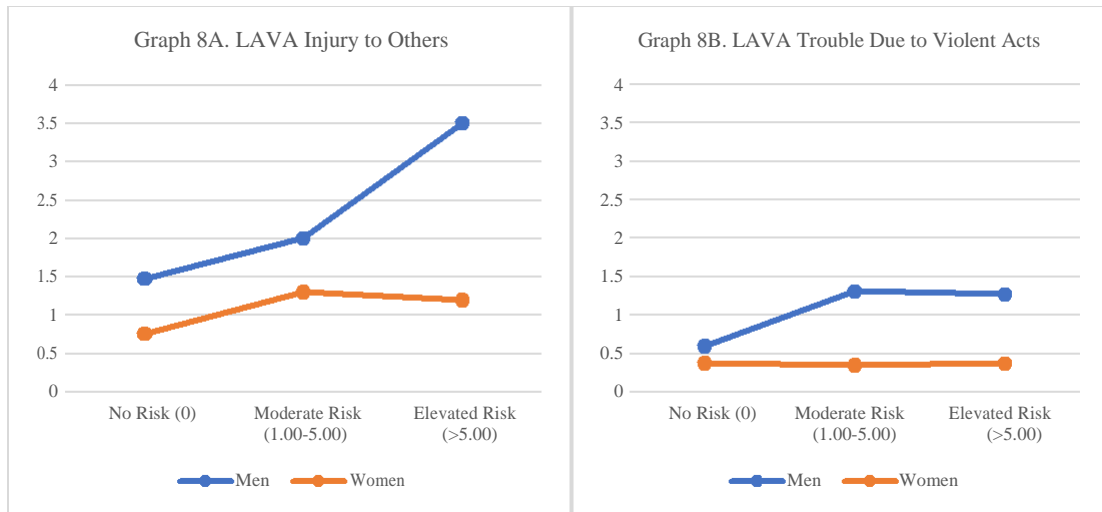
Table 8 depicts a series of 2 (Gender) x 3 (SPA) Analyses of Covariance used to further test the predictive value of the VEQ-R high-risk classifications recommended by King and Russell (2017) that were previously tested using a college sample (King et al., 2017). Variance accounted for by participant age, CPA, OPV, BULL, CEA, and CSA was controlled in each analysis. The Gender by SPA risk group classification was statistically significant for LAVA ITO ($F=8.89, p < .001$) and LAVA TVA ($F=12.91, p < .001$), but the rest of the results were aggregated across gender. Frequencies of SPA as low as once a year (12 total acts) were associated with significant elevations in three of the criterion indices (Conduct Disorder Symptoms, BPAQ Trait Hostility, and LAVA TVA among males). Frequencies of SPA as often as five times per year (60 total acts) were associated with significant elevations in three of the criterion indices (Conduct Disorder Symptoms and LAVA ITO and TVA among males).

Table 8.

Sibling Physical Abuse High Risk Group Analyses of Covariance on Criterion Indices

Aggression Indices	No Risk (0)			Moderate Risk (1.01-5.00)			Elevated Risk (>5.00)			(Sibling Physical Abuse Significance)	
	<i>M</i>	<i>SE</i>	<i>n</i>	<i>M</i>	<i>SE</i>	<i>n</i>	<i>M</i>	<i>SE</i>	<i>n</i>	<i>F</i>	η^2
Conduct Disorder Symptoms	1.22 ^a	.09	401	1.88 ^b	.25	46	1.98 ^b	.20	94	6.97**	.026
BPAQ Trait Aggression	19.63	.38	397	20.10	1.04	46	19.20	.83	95	.27	.001
BPAQ Trait Anger	14.71	.29	398	15.25	.79	48	14.20	.64	98	.55	.002
BPAQ Trait Hostility	18.25 ^a	.39	405	19.10 ^b	1.05	48	16.28	.85	97	2.66	.010
LAVA Lifetime Aggression	2.20	.15	419	2.70	.40	50	2.60	.33	101	1.03	.004
LAVA Injury to Others-F	.76	.12	265	1.33	.37	26	1.19	.28	63	1.59	.009
LAVA Injury to Others-M	1.48 ^a	.24	154	2.01	.60	24	3.51 ^b	.52	38	5.68**	.052
LAVA Trouble Due to Violent Acts-F	.38	.06	265	.36	.19	26	.35	.15	63	.02	.000
LAVA Trouble Due to Violent Acts-M	.59 ^a	.10	153	1.27 ^b	.25	24	1.24 ^b	.22	38	5.15**	.047
LAVA Reactive Acts	1.11	.10	419	1.54	.27	50	1.52	.22	101	1.89	.007

Cell differences designated by letters; * $p < .05$, ** $p < .01$, *** $p < .001$



CHAPTER IV

DISCUSSION

The present study further evidences that experiencing recurrent abuse, irrespective of the type of abuse, increases the risk of lifetime aggression. The VEQ-R SPA predictor of lifetime aggression performed comparably to CPA, OPV, BULL, CEA, and CSA as predictors of lifetime aggression— supplementing the growing literature documenting the potential risks of these types of harsh developmental conditions on long-term psychological adjustment (Button & Gealt, 2010; Garcia et al., 2000; Garey, 1999; Hoffman & Edwards, 2004; Mackey et al., 2010; Simonelli et al., 2002; Stocker et al., 2002; Tippett & Wolke, 2015; Tucker et al., 2013; Wiehe, 1997).

Table 2 depicted the distribution of LAVA LETHAL scores and ITO scores. Of each indication of lifetime aggression measured in the present study, LETHAL and ITO have the most detrimental consequences. SPA was found to elevate the relative risk of LETHAL among males by 2.29 and ITO among males and females by 1.42 and 1.44, respectively. Such deleterious implications of sibling physical abuse warrant careful consideration in any future studies that attempt to control for co-occurring maltreatment.

As demonstrated in Table 3, the present study failed to replicate the significant gender differences in coefficient strengths for bivariate correlations between aggression indicators and SPA that were found in the previous study. The present study also found fewer significant correlations between aggression indicators and SPA among females than the previous study found between aggression indicators and Sibling Hostility among females. These discrepancies are perhaps explained by the national sample being more evenly distributed (See Table 2). The present study also found significant correlations

among aggression indicators and CSA among males that were not found in the previous study.

Table 3 demonstrates that there are far more similarities than differences between the previous study and the present study, however. The present study found significant correlations between aggression indicators and CPA, OPV, and BULL for both males and females. These significant correlations closely resemble those found in the previous study between aggression indicators and Parental Hostility, Domestic Hostility, and Peer Hostility between both males and females. The high correlations between SPA and CEA, CPA and CEA, and CPA and OPV further highlight the need to consider co-occurring types of abuse when conducting childhood maltreatment research.

Table 4 demonstrates support for assessing co-occurring childhood maltreatment based on the relational age of the perpetrator to the victim. Having been abused by a younger sibling was significantly different from never having been abused by a sibling in 75% of the criterion indices. Having been abused by an older sibling was significantly different from never having been abused by a sibling in 25% of the criterion indices. There were also significant differences between the relational age of the perpetrator to the victim in over 8% of the criterion indices. These results suggest that the implications of the relational age of the perpetrator to the victim warrant careful consideration in any future studies that attempt to control for co-occurring maltreatment.

Table 5 demonstrates modest support for assessing co-occurring maltreatment based on the familial structure of the perpetrator and the victim. Having been abused by a full-sibling was significantly different from never having been abused by a sibling in over 58% of the criterion indices. Having been abused by a half-sibling was significantly different

from never having been abused by a sibling in over 16% of the criterion indices. Having been abused by a step-sibling was significantly different from never having been abused by a sibling in over 8% of the criterion indices. These results suggest that the implications of the familial structure of the perpetrator and the victim may warrant some consideration in future studies that attempt to control for co-occurring maltreatment.

As demonstrated in Table 6, the VEQ-R CEA predictor significantly predicted Conduct Disorder Symptoms, BPAQ Trait Aggression, and BPAQ Trait Hostility for both males and females in this sample. However, the VEQ-R SPA predictor failed to account for unique variance in Conduct Disorder Symptoms, BPAQ Trait Aggression, and BPAQ Trait Hostility for both males and females in this sample. In the previous study, Sibling Hostility accounted for unique variance in Conduct Disorder Symptoms, BPAQ Trait Aggression, and BPAQ Trait Hostility for both males and females in the college sample. This discrepancy is most likely due to Sibling Hostility being more broadly defined than SPA (i.e., accounting for threats of violence and heated verbal conflict).

Table 7 demonstrates that the VEQ-R CEA predictor significantly predicted each criterion score for females and each criterion score for males, aside from LAGG. However, the VEQ-R SPA predictor only accounted for unique variance among females in this sample in relation to LAGG. In the previous study, Sibling Hostility accounted for each of the criterion scores for females but not males. This discrepancy is also most likely due to Sibling Hostility being more broadly defined than SPA (i.e., accounting for threats of violence and heated verbal conflict).

Table 8 demonstrates partial support for the risk classification thresholds that were suggested by prior VEQ-R research (King & Russell, 2017) and supported in the previous

study. Whereas, the three-group risk classification strategy accounted for significant variance in 60% of the criterion measures in the college sample, the national sample in the present study only obtained significant variance in 30% of the criterion measures. The Moderate Risk threshold for the present study was associated with significant increases in Conduct Disorder Symptoms, BPAQ Trait Hostility, and LAVA TVA among males. The “Elevated Risk” of SPA scores in excess of 5 was linked to significantly higher criterion scores for Conduct Disorder Symptoms, LAVA ITO among males, and LAVA TVA among males. These results suggest that the identification of even low levels of SPA are substantial enough to elicit concern regarding elevations in adolescent conduct disorder, trait hostility, and various forms of physical aggression.

Design Limitations and Future Directions

The present study utilized the VEQ-R, which is somewhat reliant on broad descriptions of aggressive acts (i.e., pushing, shoving, shaking, striking, kicking, punching, beating, burning, or use of a weapon to inflict pain or injury) that could potentially discount the impact of isolated, but severe, abusive incidents. The present study relied exclusively on retrospective self-report measures, therefore verification of the accuracy of participant recollections could not be attained. This particular sample also underrepresented Hispanic and Latinx Americans. While the present study did provide some statistical controls for the potential effects of co-occurring forms of childhood maltreatment on the criterion measures, it is more plausible that aggressive tendencies stem from biological, psychological, and sociological roots that are not easily made distinctive.

Sibling physical abuse was associated with lifetime aggression within this particular national sample. Physical abuse perpetrated by a younger sibling and older sibling differed significantly from never having been abused by a sibling in 75% and 25% of criterion indices,

respectively. Further, the relational age of the perpetrator to the victim significantly differed in over 8% of the criterion indices. Physical abuse perpetrated by a full-sibling differed significantly from never having been abused by a sibling in over 58% of the criterion indices, while physical abuse perpetrated by half-siblings and step-siblings differed significantly from never having been abused by a sibling in over 16% and 8% of the criterion indices, respectively. However, there were no significant differences between the familial structure of the perpetrator and the victim in any of the criterion indices. Further, Moderate Risk thresholds (experiencing one to five acts of sibling physical abuse per year) were associated with elevations in 30% of the criterion indices even after statistical controls were applied to account for participant age and co-occurring CPA, OPV, BULL, CEA, and CSA.

The data rendered in the present study should serve to underscore the potentially harmful effects of sibling physical abuse, or rather common physical acts of aggression between siblings during upbringing. Clinicians should note the high prevalence of sibling physical abuse, likelihood of it remaining undetected in clinical settings, and the low levels of exposure to sibling physical abuse required to prompt adverse consequences. The present study also draws specific attention to the heightened impact of sibling physical abuse perpetrated by a younger sibling as opposed to an older sibling. This heightened impact likely stems from American attitudes toward sibling abuse—physical abuse directed at a younger sibling by an older sibling is often written off as sibling rivalry and considered a normal part of childhood, whereas abuse perpetrated by a younger sibling is much less common and is therefore likely to elicit more concern.

APPENDICES

Appendix A

Family Physical Abuse

Some of the following questions do overlap with items just completed. Please respond, however, since these items are being used to determine their consistency with others completed above. Please **leave item blank if not applicable or no basis for recall** (i.e., never had a step-parent or sibling).

Did any of the following family members aggress against you in any of these ways during upbringing (ages 5-16)?

	Biological Father				Biological Mother				Siblings (Full/Step/Half)			
	Never	Once	Twice	Multiple	Never	Once	Twice	Multiple	Never	Once	Twice	Multiple
Hit you with something dangerous like a baseball bat, shovel, or something else that could hurt you badly?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hit you with something less dangerous, like a paddle, a hairbrush, or a belt?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hit or punched you with their hand or fist, or kicked you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pushed you, or threw you down, like against a wall or down the stairs?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tried to choke, drown, or smother you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Burned you on purpose, with a cigarette, a curling iron or maybe some very hot water, or something else?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cut or stabbed you with a knife, a razor, a fork, or something sharp like that?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shot at you with a gun?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Punished you by not letting you sleep, or eat, or drink, for a whole day or more?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Punished you by tying you up, or locking you in a small place, like a closet?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Made you eat or drink something that wasn't food that might hurt you, or make you sick?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did something else on purpose to you, that wasn't indicated above, that physically hurt you or put you in danger of being hurt?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix B

Violent Experiences Questionnaire (VEQ-R)

Please use the letters A through I to indicate the extent to which you experienced or observed each of the following events between the ages of 5 and 16.

<i>Frequency Index of Incident:</i>	ACTS TOWARD YOU BY A			ACTS TOWARD YOU BY A			ACTS OBSERVED <i>BETWEEN</i>		
A) never happened									
B) happened only once									
C) happened only twice									
D) happened less than four times									
E) happened about once a year									
F) happened about twice a year									
G) happened about once a month									
H) happened about once a week									
I) happened more than once a week									
TARGET ACT	5-8	9-12	13-16	5-8	9-12	13-16	5-8	9-12	13-16
<i>Parental Discipline:</i> spanking or other forms of reasonable <i>physical</i> discipline producing mild to moderate pain <i>without physical injury</i>									
<i>Verbal Conflict:</i> yelling, cursing, damaging property, and other expressions of anger <i>without any physical injury</i>									
<i>Threats of Physical Violence:</i> statements or gestures expressing a <i>threat</i> to inflict physical injury									
<i>Physical Acts with or without Physical Injury:</i> pushing, shoving, shaking, striking, kicking, punching, beating, burning or use of a weapon to inflict pain or injury									
				ACTS BY BULLIES					
<i>Peer Bullying Experiences:</i> How often were you physically taunted or bullied by peers during or after school?									
How often were you called names or verbally teased by peers during or after school?									

Blank spaces will be scored as "A" (never happened). Add clarifying comments on the back if you like.

Appendix C

LIFETIME ASSESSMENT OF VIOLENT ACTS (LAVA) (Continued)

How many times in your life have you acted aggressively?

0 1 2 3 4 5 6 7 8 9 10

Have you ever been in trouble because of violent behavior?

No Once Twice 3-5 times >5 times

Please identify any injuries that you inflicted on someone else during past violent acts? (Leave blank if not applicable.)	Most Recent Act	Second Most Recent	Third Most Recent	Fourth Most Recent	Fifth Most Recent
G) I felt betrayed by someone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
H) I was involved in competition and lost my temper.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I) The target of the act was <i>not</i> trying to provoke me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
J) The target of the act was a romantic partner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
K) The target of my act was drinking alcohol.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
L) I was under the influence of alcohol. (probably <i>less</i> than the legal limit)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
M) I was under the influence of alcohol. (probably <i>over</i> the legal limit)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N) I was under the influence of alcohol. (definitely <i>over</i> than the legal limit)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
O) I threatened to kill someone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
P) I used a weapon to threaten someone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Q) I used a weapon against someone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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