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Three Patterns of Domestic Violence in Households: Single Victimization, Repeat Victimization, and Co-occurring Victimization

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Abstract Using National Crime Victimization Survey data (1992–2004), this study analyzed the effects of household variables, victim characteristics, and incident characteristics on three household family violence patterns (single victimization, repeat victimization and co-occurrence). Eighty percent of family violence households experienced one victimization; 15% experienced repeat victimization; 5% experienced co-occurrence. The total number of people in the household was positively related to multiple violent victimization households, especially co-occurrence households. Victims with less than a high school education (compared to victims with a high school education) had significantly higher odds of living in a co-occurrence household versus a repeat victimization household. Victims who experienced threatened attacks compared to completed attacks with no injury had higher odds of living in single victimization or repeat victimization households but had lower odds of living in co-occurrence households. Respondents victimized by ex-spouses, parents/stepparents, siblings, and other relatives had consistently higher odds of living in co-occurrence households versus repeat victimization households compared to those victimized by spouses.

Keywords Family violence · Co-occurrence · Victim-offender relationships · NCVS · Repeat victimization

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Background

A significant amount of crime is made up of acquaintance/family crime and interpersonal violence (Rand 2006). As a result, it is not surprising that domestic violence is a topic of vast interest among researchers. However, previous research has primarily focused on spouse-on-spouse abuse, child abuse, or sibling violence. Few studies have examined co-occurrence of spousal abuse, child abuse, and/or violent acts against other family members living in the household. One example of studies that have examined co-occurrence found that "40.7% of parents perpetrated both intimate partner and child maltreatment" (Dixon et al. 2007, p. 675). Viewing the family as a whole, this study seeks to understand the differences among three victimization patterns of domestic violence within households. In this research, households with only one violent incident (e.g. rape or sexual assault, robbery, aggravated assault or simple assault) are termed single victimization households. A short narrative example of this type of household is found in the excerpt below.

> "He did not hit J until after they got married. J says 'I went numb. You never forget it when someone hits you that hard, and you never have to be hit that hard again to continue to be afraid…In the following years that we were together, I was always afraid that he would, and it kept me in line'" (LaViolette and Barnett 2000, p. 103).

Households in which the same victim is attacked repeatedly are termed repeat victimization households in this research. The narrative excerpt below gives an example of this type of household.

> "A little more than a year ago H jammed a pork chop into his wife's face as he sneered, 'You disgust me.'

'It was a minor incident compared to the abuse I had done in the past,' he said. Over that weekend, H continued to berate his wife, silencing her with threats of additional violence…On Sunday, terrified by the torrent of abuse, H's wife called the police. The cut on her face from the pork chop bone two days earlier was still visible, and that's all the police needed to make the arrest" (Ibelle 1995, p. 1).

Lastly, households in which a family member(s) attacks different members are termed co-occurrence households. Examples of co-occurrence households include mutual spouse-on-spouse violence, parent-child violence, sibling violence and violence by other family members, such as aunts/uncles, grandparents and cousins occurring in the same household. Another narrative excerpt below describes one subtype of a co-occurrence household, one with both spousal abuse and child abuse.

"My parents fought. Well, no. My dad fought. Mom just sat there and took it. Sometimes he'd beat her up, storm out of the house and go get drunk. Those nights were the worst because after Dad left, she'd come to my room and beat on me. I can still hear her saying 'I staying with him because of you. This is all your fault.'" (Haley and Braun-Haley 2000, p. 107).

There is limited information about distribution and correlates of the three patterns of family violence households: single occurrence, repeat victimization and co-occurrence. Typically, the focus in family violence research is on one type of victim, such as spouses (especially women) or children. Very little research is available on repeat victimization due to increased complexity of conducting longitudinal research to obtain information about individuals who are attacked repeatedly or during different spells. Furthermore, children or youth attacked by their siblings are less often seen as victims in family violence research, and therefore less often studied (Eriksen and Jensen 2006). Consequently, focusing on a single type of victim often ignores the family as a system, thereby ignoring the violence that occurs among other family members. Studying the three types of family violence victimization patterns in households, on the other hand, focuses attention on family violence as an interactive process involving multiple family members (including parents, siblings, significant others and other family members) whose arguments and conflicts with each other eventually escalate into violence against each other. Another consequence of the single victim perspective is that family and household level variables are often ignored, especially family structural variables.

Using an ecological approach suggests a different explanatory process. The ecological approach views do-

mestic violence or abuse as a complex result of personal, situational and sociocultural factors (Cottrell and Monk 2004; Heise 1998; Little and Kaufman Kantor 2002; Tajima 2004; Tajima 2000). The ecological perspective views the individual in the context of the social environment, which includes the microsystem (e.g., family), the exosystem (e.g., social system), the mesosystem (e.g., relationships between the family and the social system) and the macro-system (e.g., social norms or ideologies) (Tajima 2004). Thus, ecological theory takes into account factors at a variety of levels that contribute to family violence. For example, Tajima (2000) found that although wife abuse increased the risk of child abuse occurring in the home, parent, child and family characteristics were more important predictors of child abuse than they were for wife abuse. Moreover, Tajima (2004) used the ecological perspective to study the co-occurrence of wife abuse and child abuse. He found that families involved in the co-occurrence of these two types of violence were "marked by less education, worse health, increased reports of depression, and increased husband drug use" (p. 399). Heise (1998) also used the ecological perspective to explain violence but she used it to study only violence against women. Although both of these researchers used the ecological approach to study domestic violence, neither examined the effects of social structural variables, such as employment or poverty.

The pioneering National Survey of Family Violence (Straus et al. 1980) provided a glimpse at the co-occurrence of violence in the household. In their first national survey of family violence, Straus et al. (1980, p. 37) found that in households where there was any violence reported between husband and wife in the preceding year, the most common situation (49%) was that both spouses attacked each other (one form of co-occurrence). This was nearly twice as prevalent as only the husband attacking the wife (27%) or only the wife attacking the husband (24%) (Straus et al. 1980, p. 37). In another form of co-occurrence, Straus et al. (1980, p. 118) found that the percent of children who severely attacked a sibling increased as the rate of parent-to-child violence increased. In yet another form of co-occurrence, the percent of child-to-parent violence also increased as the rate of spousal partner violence increased (Straus et al. 1980, p. 120). Evidence for the importance of other non-violent forms of family conflict was also found. For instance, Straus et al. (1980, p. 169) reported that spouses' verbal abuse of their partners was strongly associated with physical violence towards their partners. For example, of the most verbally abusive quartile of spouses, 56% were also physically violent towards their partners. Of the top 5% of the most verbally abusive spouses, 83% were also physically violent toward their partners.

These findings showed that even thirty years ago, in households where spousal violence occurred, the most

common situation was that both spouses attacked each other. In addition, these findings showed that there is a relationship among spousal violence, sibling violence, and child-to-parent violence. Arguments between spouses were associated with attacks on each other; however, where there was no verbal conflict, there was rarely any violence. These findings from Straus et al. (1980) indicated to us that it is important to view the family as a group in which the members have conflicts and attack each other rather than focusing on what happens only to one specific member.

Thus, we reasoned that to study family violence from the perspective of "the family" would require information about households (family members or intimate partners living in the same dwelling unit) and the three different patterns of family violence (single victimization, repeat victimization, and co-occurrence). To our knowledge, these three patterns have not been studied together (because data about repeat victimization and co-occurrence are relatively rare). Therefore viewing family violence from an ecological perspective, we used data from the National Crime Victimization Survey (1992–2004, hereafter NCVS) to analyze the effects of several independent variables from different domains on the three victimization patterns within households. These domains include household characteristics (the effect of the total number of people in the household, income and living in poverty), victim characteristics (education, race, employment status, sex and age) and incident characteristics (what happened during the incident, substance use by the offender prior to an incident and the victim-offender relationship). Although it would have been interesting to examine perpetrator characteristics, this information is limited in the NCVS. Since many victims generally do not know their offender(s), focusing attention on offender characteristics in the NCVS would have produced mainly lots of item missing data. However, some key variables like whether the victim knew the offender and if so, how the offender was related to the victim, were collected in the NCVS. These limited variables and the longitudinal design of the NCVS nevertheless made it possible to determine the patterns of single victimization, repeat victimization and co-occurrence in households.

Methods

Sample and Data

The National Crime Victimization Survey (NCVS) has been collecting data about personal and household victimizations from probability samples of households continuously since 1972. In 1992, a major revision of the survey implemented new strategies for identifying victimizations through a significantly revised screening interview. The revision had the effect of increasing estimates of sexual assault and other crimes like attacks by family members that survey respondents had theretofore been reluctant to mention (Kindermann et al. 1997). The rates of nonstranger violent crime were about 80% higher using the new design compared to the original design (Kindermann et al. 1997: Tables 1 and 2). The changes implemented in 1992 caused a "break in series" so that the pre-1992 data must be significantly adjusted if used in trend comparisons spanning the old and new design periods. Therefore, we chose to use NCVS data collected using the new survey design features beginning in 1992. The data we used are contained in the publicly available computerized NCVS data collection at the National Archive of Criminal Justice Data at the Inter-University Consortium for Political and Social Research (ICPSR), University of Michigan. One part of the NCVS data collection is an annually updated file of victimization incidents known as the concatenated incident file. This file contains information about all victimization incidents reported in the survey from 1992–2004 (ICPSR Study #4276).

In the NCVS, each sampled household remains in the sample for three years and a total of seven interviews. Until recently, the first interview was used only for bounding purposes. The second through seventh interviews were used to compute victimization estimates and were available for secondary analysis. Analysis files can be constructed using either the collection year (twelve months) or the data year (18 months). The Bureau of Justice Statistics has begun using the collection year (12 months) to report annual victimization estimates since data can be released earlier. Furthermore, since the NCVS data are hierarchical, one can also choose to build a "file" at the household-level, person-level, or incident-level. This research initially employed the incident-level data for 1992 through 2004 using the collection year to create the independent variables and information needed for the dependent variable. The file was then aggregated to the household level in order to finalize the dependent variable to complete the analysis. Moreover, the data were restricted (filtered) to violent victimization incidents (e.g. rape or sexual assault, robbery, aggravated assault and simple assault) involving intimate partners and other family members. As a result of these stipulations, there was a total of 4,331 households in this research that collectively experienced 5,584 family violence victimizations.

Since its inception, the NCVS has had its fair share of criticism for both overcounting and undercounting victimization and crime. In the early years of the NCVS (1970 s), a favorite critical comparison involved the NCVS and the FBI's Uniform Crime Reports, the nation's two major measures of crime. The UCR crime index data counts were considerably lower than NCVS data estimates about the prevalence of crime. Analysis of NCVS data soon revealed

Table 1 Households with family violence by victimization pattern and frequency [a]

Frequency of Family Violence Victimizations	Family Violence Patterns in the Household			
	Single Victimization	Multiple Victimizations		Total
		Same Victim (Repeat Victimization)	Different Victims (Co-occurrence)	
One Only	3,482	0	0	3,482
	100.0%	0%	0%	80.4%
Two Only	0	447	134	581
	0%	70.0%	63.8%	13.4%
Three Only	0	125	54	179
	0%	19.6%	25.7%	4.1%
Four to Eight	0	67	22	89
	0%	10.5%	10.5%	2.1%
Total	3,482	639	210	4,331
	80.4%	14.8%	4.8%	100.0%

National Crime Victimization Survey 1992–2004, Concatenated Incident File, ICPSR #4276

[a] Cell entries are unweighted sample frequencies and percents

that the most significant difference between the two series was the fact that not all victimizations measured by the NCVS were reported to police, even when the NCVS was limited to offense types included in the UCR crime index. Another difference in the opposite direction was that the nationwide NCVS did not measure commercial victimizations but the UCR did. What is one to make of these differences? These early analyses showed that neither measure was a "perfect" measure of crime because of definitional and methodological differences. Did these differences mean that the UCR and NCVS were not useful tools? No, absolutely not, because for one reason, the NCVS revealed the magnitude and correlates of non-reporting of crime to police. One such correlate was seriousness of the incident. Many NCVS respondents did not think that an incident was serious enough to warrant police intervention, did not think that the police could do anything about it or wanted it to remain a private matter.

Reviewers of our initial manuscript correctly were concerned about the undercount that the NCVS has in comparison to other surveys and studies of family violence (e.g., the National Survey of Family Violence, 1976; the National Violence Against Women Survey, 1994; and clinic or shelter samples). Like the history of the NCVS and the UCR comparisons, a comparison of the NCVS and these other surveys focused entirely on family violence reveals that there are specific reasons for the NCVS undercount of family violence. To identify just two, surveys using the Conflict Tactics Scale count a domain of events on the low end of the seriousness dimension that the NCVS does not count. Since low seriousness events are more common, the surveys using the CTS or similar instrumentation generate

more events. The NCVS also does not measure some forms of family violence like child abuse and some sibling violence because respondents must be 12 or older to be included in the survey as either direct or proxy respondents. A third, more speculative reason for differences is analogous to the way that victims chose not to report a crime to police because they wanted it to remain a private matter and therefore were not counted in the UCR statistics. The NCVS may include respondents who did not want to report incidents involving a family member to the interviewers because they wanted it to remain private, whereas respondents to "family violence" surveys initially consented to answer questions about conflicts and events involving family members. Finally, a fourth difference between the NCVS and samples specifically studied in regard to family violence has to do with Johnson's distinction between common couple violence and patriarchal terrorism (Johnson 1995). Johnson indicated that violence against women is quantitatively and qualitatively different depending upon the origin of the sample. General population samples tend to produce a pattern of violence against women that he characterizes as common couple violence. Clinic and shelter samples tend to produce a pattern of women victims of domestic violence that he describes as victims of prolonged patriarchal terror. The key differences are that samples from clinics and shelters tend to reflect much more frequent, prolonged and severe victimization to such a degree that Johnson argues that they are qualitatively different than the respondents included in general population samples. Johnson's distinction and the aforementioned differences between the NCVS and other general population family violence surveys suggest that there is a

Table 2 Binary logistic regression models for multiple victimization households versus single occurrence households on household, victim, & incident characteristics

Predictors	Model 1	Model 2	Model 3	Model 4
Constant	−1.554***	−2.018***	−1.183***	−1.471***
	0.211	**0.133**	**0.307**	**0.230**
Total People in Household[b]	0.084***	0.105***	0.095***	0.102***
	1.088	**1.110**	**1.099**	**1.108**
Midpoint of Income[b]	0.000	0.000	0.000	0.000
	1.000	**1.000**	**1.000**	**1.000**
Living in Poverty[c]	−0.019	−0.003	−0.019	−0.019
	0.981	**0.997**	**0.981**	**0.981**
(Ref-High School Edacation)				
Less than High School[c]		−0.423*		−0.363*
		0.655		**0.696**
College[c]		−0.116		−0.121
		0.891		**0.886**
Graduate School[c]		−0.249		−0.047
		0.780		**0.954**
(Ref-White)				
Black[c]		−0.397**		−0.348**
		0.672		**0.706**
Other[c]		0.021		0.036
		1.021		**1.037**
(Ref-Currently Employed)				
Employed Previous 6 months		−0.155		−0.128
		0.856		**0.880**
Unemployed[c]		0.039		0.081
		1.040		**1.084**
Sex of Victim[d]		0.215*		0.131
		1.240		**1.140**
Age of Victim[b]		0.011***		0.006
		1.011		**1.006**
Completed Attack With Injury[c]		0.153		0.167
		1.166		**1.182**
(Ref-Alcohol Only)				
No Substance Use [c]			−0.231**	−0.190*
			0.794	**0.827**
Drugs Only[c]			0.036	0.041
			1.036	**1.042**
Both Alcohol & Drugs[c]			−0.002	−0.001
			0.998	**0.999**
(Ref-Victims Spouse)				
Ex-Spouse[c]			−0.513***	−0.514***
			0.599	**0.598**
Parent or Step-parent[c]			−0.619***	−0.509**
			0.539	**0.601**
R's Child or Stepchild[c]			−0.030	−0.086
			0.971	**0.918**
Brother or Sister[c]			−0511**	−0.423**
			0.600	**0.655**
Other Relative[c]			−0.772**	−0.707***

Table 2 (continued)

Predictors	Model 1	Model 2	Model 3	Model 4
			0.462	**0.493**
Boy/Girlfriend or Ex-Boy/Girlfriend[c]			−0.432***	−0.365***
			0.649	**0.694**
Model X^2	15.793***	52.905***	75.664***	95.469***

National Crime Victimization Survey 1992–2004, Concatenated Incident File, ICPSR #4276

Cell Entries are Coefficients, Exp(B) are in bold, $N = 4331$, $*p <.05$, $**p <.01$, $***p <.001$

[b] Continuous variable

[c] Dummy variable coded No = 0, Yes = 1

[d] Dichotomous variable coded Male = 0, Female = 1

continuum of family violence responses ranging from a general survey about victimization (the NCVS) on the low end to clinic and shelter samples on the high end, with focused family violence surveys in the middle. This continuum may be a product of conceptual variation, instrumentation differences and different populations studied (resulting in sampling variation). Given these known variations, a key question is why the NCVS was chosen for use in this research on family violence patterns in households.

The NCVS was used for this research because it supported the exploration of the three types of family violence in households and it also allowed for the investigation of a variety of independent variables, including household characteristics (e.g., total number of people in the household, household income and household living in poverty), victim characteristics (e.g., education, race, employment status, sex and age) and incident characteristics (e.g., what happened during each incident, if injuries were experienced, substance use of the offender during the incident and the relationship between the victim and the offender). Demographic information about the offender was unable to be determined due to the nature of the concatenated NCVS data file. The NCVS also allowed the exploration of co-occurrence at different levels, such as at the household, victim or incident-level, which enabled a more in-depth understanding of this phenomenon. Finally, to the best of our knowledge, this study is the first to use the NCVS data from the perspective of viewing the family as a group context for conflict and violence.

Measures

Dependent Variable

Type of Family Violence Households

The three patterns of family or significant other violence victimization in households is the dependent variable in this research. Determining the number of cases of violent victimizations (e.g. rape or sexual assault, robbery, aggravated assault, and simple assault) by either a family member or significant other per household created this variable. For example, households with only one violent victimization by a family member or significant other from 1992 to 2004 were considered to be single occurrence households. Households with two or more violent victimizations by a family member or significant other from 1992 to 2004 were considered to be multiple occurrence households. For multiple occurrence households, the distinction was also made between households that had multiple violent victimizations of the same victim (designated as repeat victimization) and households that had multiple violent incidents involving different victims (designated as co-occurrence), such as dad hits mom and mom hits her child.

The distinction between repeat victimization households and co-occurrence households was operationalized after the incident-level file had been aggregated to the household-level by using the standard deviation of the victim offender relationship variables. Aggregating the file to the household-level produced a separate victim-offender relationship variable for each incident in the household. A standard deviation of zero (on the victim-offender relationship variable) for multiple incident households indicated that the victim-offender relationship did not vary across incidents; therefore, the victim was the same in each incident (repeat victimization). A standard deviation that was greater than zero indicated that there were different victims across the incidents within a household, which was defined as co-occurrence. These three types of households (single occurrence households, repeat victimization households and co-occurrence households) were then recoded as dummy variables. The three dummy variables were coded in order for a response of "yes" to be coded as 1 and a response of "no" to be coded as 0.

In this research, there were 3,482 (80.4%) single occurrence households, 639 (14.8%) repeat victimization households and 210 (4.8%) co-occurrence households.

Initially, for the first four models, the two dummy variables for multiple violent victimizations (repeat victimization and co-occurrence) were combined in order to compare multiple occurrence households with single occurrence households. Therefore, multiple violent victimization households were coded "1" and single occurrence households were coded "0." For the last eight models, only the categories of multiple occurrence households were used: co-occurrence households were coded as "1" and repeat victim households were coded as "0." A full description of the models and how they were utilized in this research are presented in the Analysis section below.

Independent Variables

Total Number of People in the Household

Total number of people in the household is a continuous variable that ranged from 1 to 12. Adding the specific variables in the data set for "number of household members 12 years and older" and "number of household members younger than 12 years old" created "the total number of people in the household."

Income

Due to the nature of the response categories of the original variable being in the form of a specific range of income levels for each category (e.g. $5,000–$7,499 = 2), this independent variable was recoded. This variable was recoded in order to measure the midpoint of income level per household. The midpoint of each of the income categories was calculated by subtracting the upper and lower range of each response category. This number was then divided by 2 and finally added to the lower response category range. For example, the response category of $5,000–$7,499 was recoded to $6,249.50. For the 627 missing cases, the mean of the midpoint of the income variable was used.

Living in Poverty

Living in poverty measures the extent to which each household's annual income was below the Federal poverty level. This variable, treated as a dichotomous variable, was created by taking the total number of people living in the household and discovering the weighted average poverty thresholds for each year from 1992 through 2004 associated with a household of that size (U.S. Census Bureau 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004). Then, the poverty threshold was subtracted from the midpoint of the household income variable for that particular household. If the resulting coefficient was negative, the household was coded "1" (the household is living in poverty). On the other hand, if the resulting coefficient was positive, the household was coded "0" (the household is not living in poverty).

Education of the Victim

This independent variable measures the highest level of education completed by the victim. This variable was recoded from the original variable into four dummy variables: less than high school education, high school, college, and graduate school. Each of the four dummy variables was coded 0 for "No" and 1 for "Yes." For the 74 missing cases, the modal category of "high school" was used. In addition, the category of "high school education" is the reference category for this variable.

Race of the Victim

The NCVS measures race using self-report data, rather than using interviewer observation. Race is measured by three dummy variables (recoded from the original dataset) that include "white," "black," and "other" (combining American Indian, Aleut, Eskimo, Asian, and Pacific Islander because of the small number of respondents in these categories). The variables were coded so that the response category of "yes" was coded as 1 and the response category of "no" was coded as 0. "White" is the reference category for this independent variable.

Employment Status of the Victim

This independent variable measures the victim's current employment status. Employment status is measured by three dummy variables (recoded from the original variables) that include the categories of "employed currently," "not employed currently but employed in the previous six months" and "unemployed." The variables were coded so that the response category of "yes" was coded as 1 and the response category of "no" was coded as 0. The reference category for this variable is "currently employed."

Sex of the Victim

Sex of the victim was recoded from the original variable into categories of "female" (coded 1) and "male" (coded 0).

Age of the Victim

Age of the victim, which is not recoded from the original variable, is treated as a continuous variable. Age has response categories of 12 years old to 90 years old. The NCVS does not collect victimization data about family members younger than 12 years old; consequently, the youngest respondent in this research is 12 years old.

What Happened During the Incident

One of the useful features of the NCVS is that data are collected about a large number of characteristics of the victimization incident. From these characteristics, it is possible to create a number of different variables. For example, the Bureau of Justice Statistics uses these characteristics to create the commonly used variable "offense type." Although there are 20 specific violent offenses coded, these 20 reflect only four generic offense categories: rape and sexual assault; robbery; aggravated assault; simple assault. The 20 different codes represent the addition of incident characteristics like threatened, attempted or completed and with or without injury to the four generic categories.
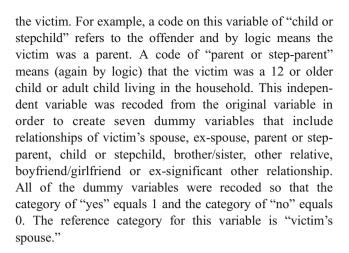
From our perspective, what actually happened during the incident was more important than the descriptive legal categorization of the offense. Therefore, we chose to create a variable that measured whether the victim was threatened with an attack, if an attack was attempted, or if an attack was completed during the incident. In addition, this variable also measured whether the victim received injuries during the incident. This variable was recoded from some original incident variables in order to create four dummy variables that include "threatened attack," "attempted attack," "completed attack with no injuries" and "completed attack with injuries." By reason of NCVS definitions and interview skip patterns, only **"completed attacks"** could have injuries. Each of the dummy variables was recoded in order for the response category of "yes" to equal 1 and the response category of "no" to equal 0. The reference category for this variable is "completed attack with no injuries."

Substance Use By the Offender

This variable measures substance use of the offender during the incident. It was recoded from the original variable into four dummy variables that include "the offender was under the influence of only alcohol during the incident," "the offender was under the influence of only drugs during the incident," "the offender was under the influence of both alcohol and drugs during the incident" and "the offender was not under the influence of drugs or alcohol during the incident." Each of the variables was recoded in order for the response category of "yes" to equal 1 and the response category of "no" to equal 0. The reference category for this variable is "alcohol only."

Victim-Offender Relationship

Victim-offender relationship measures the association between the victim and the offender in each incident. The relationship codes indicate how the offender is related to the victim. For example, a code on this variable of "child or stepchild" refers to the offender and by logic means the victim was a parent. A code of "parent or step-parent" means (again by logic) that the victim was a 12 or older child or adult child living in the household. This independent variable was recoded from the original variable in order to create seven dummy variables that include relationships of victim's spouse, ex-spouse, parent or step-parent, child or stepchild, brother/sister, other relative, boyfriend/girlfriend or ex-significant other relationship. All of the dummy variables were recoded so that the category of "yes" equals 1 and the category of "no" equals 0. The reference category for this variable is "victim's spouse."

Analysis

Analytic Framework

Binary logistic regression was employed to evaluate the relationship of the independent variables to two different versions of the dependent variable. The logic of our analysis is predicated on the different patterns of family violence within households. First, we sought to understand differences between single victim households and multiple victim households. Thus, the first four models compare all multiple violent victimization households (combining repeat victim and co-occurrence households) to single occurrence households. These four models regress the type of family violence households on numerous independent variables. Then, considering only the cases of multiple victim households, the last eight models compare co-occurrence households to repeat victimization households. These models regress co-occurrence versus repeat victim households on a variety of independent variables.

Since both dependent variables are dichotomous at both levels of the analysis (multiple victim versus single victim; co-occurrence versus repeat victim), all analyses were generated using binary logistic regression. Independent variables in each of the models consist of household characteristics (the total number of people in the household, income and whether the household is living in poverty); victim characteristics (education, race, employment status, sex and age); and incident characteristics (what happened during the incident, substance use of the offender during the incident and the victim-offender relationship).

Model 1 through Model 4 examined the variables related to multiple victimization households versus single victimization households ($N = 4,431$). These models used all the first victimization event variables as well as the household, victim and incident characteristic variables. Model 5 through Model 12 examined the variables related to co-

occurrence victimization households compared to repeat victimization households. Households with single victimizations only were excluded from these models because they did not have multiple victimizations. Models 5 through 8 included households with two or more incidents ($N =$ 849) and used the second victimization incident variables as well as the household and victim characteristic variables. Models 9 through 12 included households with three or more incidents ($N = 268$) and used the third victimization incident variables as well as the household and victim characteristic variables. Although the maximum number of victimizations in a household was eight, households with four or more family violence victimizations revealed by the survey interviews were too few in number for additional statistical analysis.

Results

This section of the paper presents results from the binary logistic regression models described above. Our results focus particularly on the full models (Models 4, 8, and 12), that is, those that include all three kinds of independent variables (household characteristics, victim characteristics and incident characteristics).

Multiple Victimization Households versus Single Occurrence Households

In Model 1 through Model 4 (includes first victimization variables only), the total number of people in the household was consistently a positively significant predictor. Therefore, controlling for other covariates, each additional person in the household increased the odds of living in a multiple violent victimization household rather than a single occurrence household by about 11% ($p = 0.000$) (see Model 4, Table 2). Secondly, controlling for other covariates, the odds of living in a multiple violent victimization household versus a single occurrence household were about 30% ($p = 0.05$) lower for victims with less than a high school education than those with a high school education (Model 4 in Table 2). In addition, according to Model 4, the odds of living in a multiple violent victimization household versus a single occurrence household were about 29% ($p = 0.004$) lower for blacks than whites, controlling for other covariates (Table 2). Moreover, controlling for other factors, those who experienced a threatened attack had approximately 32% ($p = 0.005$) higher odds of living in a multiple violent victimization household versus a single occurrence household than those who experienced a completed attack without injury (Model 4 in Table 2). Lastly, those respondents who were victimized in a first incident by someone other than a spouse (an ex-spouse, a parent or

stepparent, a brother or sister, another relative, or a boyfriend/girlfriend or ex-significant other) had significantly lower odds of living in a multiple violent victimization household versus a single occurrence household than those who were victimized by a spouse (Table 2).

The authors also regressed co-occurrence households only versus single occurrence households on the household, victim and incident characteristics; however, these results are not shown. The results were similar to the other analyses in that the victim-offender relationships of ex-spouse, other relative, and boy/girlfriend were significant but negatively related to co-occurrence. For example, respondents victimized by ex-spouses had approximately 50% lower odds of living in co-occurrence households versus single occurrence households compared to respondents victimized by spouses ($p = 0.011$). On the other hand, there were two variables (college education and age of the victim) that were positively associated with co-occurrence and statistically significant in these models; however, they were not significant in the other models discussed in this paper. For instance, victims with a college education had about 50% higher odds of living in co-occurrence households versus single occurrence households compared to those victims with a high school education ($p = 0.017$). Lastly, each additional year in age increased a respondent's odds of living in co-occurrence households versus single occurrence households by about 2% ($p = 0.019$).

Co-Occurrence Households versus Repeat Victimization Households for the Second Incident

In Model 5 through Model 8 (include the second victimization characteristics only), the total number of people in the household was significantly and positively related to living in a co-occurrence household (Table 3). In other words, controlling for other covariates, each additional person living in the household increased the odds of living in a co-occurrence household rather than a repeat victimization household by about 24% ($p = 0.000$, Model 8). In addition, controlling for other covariates, those who experienced a threatened attack had 44% lower odds of living in a co-occurrence household versus a repeat victimization household than those who experienced a completed attack but received no injuries ($p = 0.015$) (Model 8 in Table 3). Lastly, respondents who were victimized by an ex-spouse, parent/stepparent, brother/sister or other relative had significantly and positively higher odds of living in a co-occurrence household versus a repeat victimization household than those who were victimized by a spouse. For example, according to Model 8 in Table 3, those who were victimized by a parent or stepparent had approximately 761% higher odds of living in a co-occurrence household versus a repeat victimization house-

Table 3 Binary logistic regression models for co-occurrence households versus repeat victimization households on household, victim, & incident characteristics (Second Incident)

Predictors	Model 5	Model 6	Model 7	Model 8
Constant	−1.516***	−1.116**	−1.620***	−1.678**
	0.219	**0.328**	**0.198**	**0.187**
Total People in Household[b]	0.220***	0.201***	0.217***	0.216***
	1.246	**1.223**	**1.242**	**1.241**
Midpoint of Income[b]	0.000	0.000	0.000	0.000
	1.000	**1.000**	**1.000**	**1.000**
Living in Poverty[c]	−0.204	−0.214	−0.267	−0.252
	0.815	**0.808**	**0.765**	**0.778**
(Ref-High School Edacation)				
Less than High School[c]		0.700*		0.180
		2.015		**1.197**
College[c]		−0.292		−0.291
		0.747		**0.747**
Graduate School[c]		−19.869		−19.740
		0.000		**0.000**
(Ref-White)				
Black[c]		−0.130		−0.169
		0.878		**0.844**
Other[c]		−0.293		−0.127
		0.746		**0.881**
(Ref-Currently Employed)				
Employed Previous 6 months[c]		0.187		0.122
		1.206		**1.130**
Unemployed[c]		0.189		0.029
		1.208		**1.030**
Sex of Victim[d]		−0.542**		−0.124
		0.582		**0.883**
Age of Victim[b]		0.001		0.006
		1.001		**1.006**
(Ref-Completed Attack No Injury)				
Threatened Attack[c]			−0.552*	−0.575**
			0.576	**0.563**
Drugs Only[c]			−0.040	−0.023
			0.961	**0.977**
Both Alcohol & Drugs[c]			−0.499	−0.511
			0.607	**0.600**
(Ref-Victims Spouse)				
Ex-Spouse[c]			1.310***	1.344**
			3.705	**3.832**
Parent or Step-parent[c]			2.231***	2.153***
			9.309	**8.609**
R's Child or Stepchild[c]			0.646	0.541
			1.907	**1.717**
Brother or Sister[c]			1.573***	1.518***
			4.819	**4.563**
Other Relative[c]			1.039***	0.990**
			2.825	**2.692**
Boy/Girlfriend or Ex-Boy/Girlfriend[c]			−0.463	−0.429
			0.629	**0.651**
Model X^2	22.810***	45.376***	132.238***	136.838***

National Crime Victimization Survey 1992–2004, Concatenated Incident File, ICPSR #4276 Cell Entries are Coefficients, Exp(B) are in bold, $N = 4331$, *$p<.05$, **$p<.01$, ***$p<.001$

[b] Continuous variable

[c] Dummy variable coded No = 0, Yes = 1

[d] Dichotomous variable coded Male = 0, Female = 1

hold than those who were victimized by a spouse (p = 0.000), controlling for other covariates.

Co-Occurrence Households versus Repeat Victimization Households for the Third Incident

In Model 9 through Model 12 (includes third victimization variables only), the total number of people in the household was significantly and positively related to living in a co-occurrence household (Table 4). Therefore, controlling for other covariates, each additional person living in the household increased the odds of living in a co-occurrence household versus a repeat victimization household by about 31% (p = 0.009, Model 12). An additional significant finding in this research is that, controlling for other covariates, the odds of living in a co-occurrence household versus a repeat victimization household for those victims with less than a high school education were approximately 520% higher than those with a high school education (p = 0.014) (Model 12 in Table 4).

An additional significant finding, according to Model 12 in Table 4, is that every victim-offender relationship category (except for those who were victimized by a significant other or ex-significant other) had significantly higher odds of living in a co-occurrence household versus a repeat victimization household than those who were victimized by a spouse. For example, controlling for other factors, respondents who were victimized by a sibling had approximately 598% higher odds of living in a co-occurrence household versus a repeat victimization household than those who were victimized by a spouse (p = 0.012, Model 12). Moreover, those who are unemployed have 57% lower odds of living in a co-occurrence household versus a repeat victimization household than those who are employed (p = 0.048), controlling for other factors (see Model 12, Table 4).

Discussion

This research found that one-time victimization in the household by family members occurred in 80% of households whereas repeat victimization occurred in 15% of households. Moreover, although Stets and Straus (1990) found co-occurrence rate of spouse-on-spouse abuse to be 50%, this research found the co-occurrence of family violence (spouse, parental, sibling and other family relationships) in households to be 5%. The discrepancies between these two findings could be for a variety of reasons. First, different datasets were used. Stets and Straus (1990) used the National Family Violence Survey (NFVS), which incorporates the Conflict Tactics Scale (CTS). This

research, on the other hand, used the NCVS, also known as a "crime study" (Straus 1999). According to Straus (1999),

> "Crime studies also find a prevalence rate (for both men and women) that is a small fraction of the rate of assaults found by family conflict studies. The difference in prevalence rates and in gender differences between the two types of studies probably occur because crime studies deal with only the small part of all domestic assaults that the participants experience as a crime, such as assault which result in an injury serious enough to need medical attention, or assaults by a former partner" (p. 18).

In addition, Tjaden and Thoennes (2000) used the National Violence Against Women Survey, another crime study, and found significantly lower estimates of the annual intimate partner prevalence rates than those found by Straus (1977–78) and Straus and Gelles (1986). Secondly, the NCVS interviews those living in the household; therefore, if a respondent is experiencing violence from a significant other or family member not living in the household, this is not included in the NCVS. Furthermore, the CTS is based on the assumption that conflict is unavoidable, especially in families (Straus 1979); therefore, the CTS measures the "use of reasoning, verbal aggression, and violence within the family" (Straus 1979, p. 75). However, there are disadvantages to the CTS. For example, the CTS ignores sexual abuse, focuses on physical abuse and minimally measures verbal aggression (Hegarty et al. 1999). In addition, the CTS does not measure the meaning, the consequences, the intensity or the context of violent actions (Hegarty et al. 1999). The CTS does not distinguish between minor and severe acts and it does not evaluate sexual coercion and the physical injuries encountered as a consequence of the assaults (Straus et al. 1996). Therefore, studies using the CTS include psychological and physical abuse whereas this study focused on sexual assault, robbery, aggravated assault and simple assault. Moreover, Stets and Straus (1990) focus on differences in gender whereas the focus of this research is on households. Therefore, it should not be surprising that the co-occurrence results in this study are significantly different due to the reasons discussed above.

Despite these differences in the co-occurrence rate between this study and Stets and Straus (1990), the researchers believe that the results found in this study are important because the NCVS had never been used to analyze the three types of family violence households before. In addition, the changes made to the design of the NCVS in 1992 increased the number of reports of interpersonal violence by 50 to 70% (Kindermann et al. 1997), thus making the NCVS a better measure for domestic violence.

Table 4 Binary logistic regression models for co-occurrence households versus repeat victimization households on household, victim, & incident characteristics (Third Incident)

Predictors	Model 9	Model 10	Model 11	Model 12
Constant	−1.746***	−1.674*	−2.418***	−2.016
	0.175	**0.188**	**0.089**	**0.133**
Total People in Household[b]	0.309***	0.285***	0.333***	0.268**
	1.362	**1.330**	**1.395**	**1.307**
Midpoint of Income[b]	0.000	0.000	0.000	0.000
	1.000	**1.000**	**1.000**	**1.000**
Living in Poverty[c]	0.008	0.317	−0.064	0.379
	1.008	**1.373**	**0.938**	**1.461**
(Ref-High School Edacation)				
Less than High School[c]		1.953**		1.824**
		7.049		**6.198**
College[c]		−0.282		−0.204
		0.754		**0.816**
Graduate School[c]		−20.469		−21.835
		0.000		**0.000**
(Ref-White)				
Black[c]		0.220		0.889
		1.246		**2.432**
Other[c]		0.972		1.239
		2.643		**3.452**
(Ref-Currently Employed)				
Employed Previous 6 months[c]		−0.084		0.270
		0.919		**1.311**
Unemployed[c]		−0.340		−0.839
		0.712		**0.432**
Sex of Victim[d]		−0.545		−0.523
		0.580		**0.593**
Age of Victim[b]		0.010		0.002
		1.010		**1.002**
(Ref-Completed Attack No Injury)				
Threatened Attack[c]			−0.315	−0.193
			0.730	**0.824**
Attempted Attack[c]			−1.169	−1.046
			0.311	**0.351**
Completed Attack With Injury[c]			0.012	−0.200
			1.013	**0.818**
(Ref-Alcohol Only)				
No Substance Use [c]			0.115	0.092
			1.122	**1.096**
Drugs Only[c]			0.147	−0.287
			1.159	**0.750**
Both Alcohol & Drugs[c]			−0.165	−0.062
			0.848	**0.940**
(Ref-Victims Spouse)				
Ex-Spouse[c]			1.851***	2.063***
			6.369	**7.867**
Parent or Step-parent[c]			1.966**	2.272**
			7.143	**9.704**

Table 4 (continued)

Predictors	Model 9	Model 10	Model 11	Model 12
R's Child or Stepchild[c]			1.186*	1.307*
			3.273	**3.694**
Brother or Sister[c]			2.024**	1.942**
			7.567	**6.972**
Other Relative[c]			1.380*	1.285*
			3.973	**3.616**
Boy/Girlfriend or Ex-Boy/Girlfriend[c]			−0.328	−0.468
			0.720	**0.626**
Model X^2	17.342***	33.414***	61.569***	77.460***

National Crime Victimization Survey 1992–2004, Concatenated Incident File, ICPSR #4276 Cell Entries are Coefficients, Exp(B) are in bold, $N =$ 268, *$p <.05$, **$p <.01$, ***$p <.001$

[b] Continuous variable

[c] Dummy variable coded No = 0, Yes = 1

[d] Dichotomous variable coded Male = 0, Female = 1

In all of the models, the total number of people in the household was a significant correlate and is positively related to multiple violent victimization households, especially co-occurrence households. This finding supports previous research by Bowker et al. (1988) that families with the co-occurrence of domestic violence and child maltreatment are more likely to have a larger household size or a greater number of children. However, this finding contradicts results of Hazen et al. (2004) who found that the frequency of severe violence by caregivers was lower for households with three children than households with one child. Due to the mixed findings about the effect of the number of people in the household, future research should further examine this issue. Our initial reaction to this finding was that it was "obvious" or was a structural artifact: The more people who live in a household, the more opportunity there is for violent interactions among them. However, just because there are more household members does not mean *ipso facto* that there has to be a greater variety of actual victims (as opposed to potential victims). Therefore, we interpret this finding to reinforce the idea that family violence is an interactive process among family members rather than just one offender attacking the same victim once or repeatedly. This interpretation is also supported by the finding that respondents victimized by offenders who were not spouses (e.g., parents, siblings or other live-in relatives) had higher odds of living in a co-occurrence household versus a repeat victim household than respondents who were victimized by spouses.

Another important finding in this research is that victims with less than a high school education also had significantly higher odds of living in both multiple occurrence households and co-occurrence households. This finding supports research by Cox et al. (2003) that lower education levels

"compound the risk for child maltreatment associated with domestic violence" (15). This result also supports the finding of Tajima (2004) that an important correlate of the co-occurrence of wife and child abuse is education, especially low levels of education. However, we are not as clear about the role of lower education in family violence as the ecological theories are. In the NCVS data, presence of 12 and older teen victims could be contributing to the observed relationship between lower education and co-occurrence because most of these youth would still be in secondary school and therefore would be coded as having less than a high school education.

An additional significant finding in this research was that respondents victimized by ex-spouses, parents/stepparents, siblings and other relatives were consistently significant in all of the models. These non-spouse family offenders had higher odds of coming from single occurrence households than multiple victimization households. If, however, they were from multiple victim households, odds were higher that they came from co-occurrence households versus repeat victimization households. The discrepancy in these findings could be a result of the repeat victimization category biasing the results when it is a combined category with co-occurrence households, particularly when multiple victimization households are compared to single co-occurrence households.

In addition, in the three full models (Models 4, 8, and 12) with household, victim and incident characteristics, sex of the victim was not significant. This is interesting since sex of the victim was significant in Models 2 (includes first victimization variables, household characteristics and victim characteristics) and 6 (includes second victimization variables, household characteristics and victim characteristics). Perhaps the family structure of the household, the victim-offender relationship or other independent variables

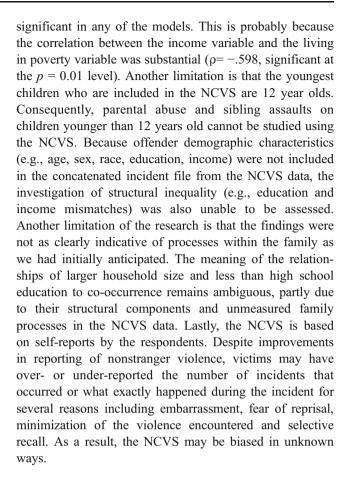that are not measured in the NCVS are more important in the co-occurrence of family violence than sex.

Another possibility for why sex was not significant in the full models (Models 4 and 8) could be a result of the addition of the victim-offender relationship variables. For instance, previous research has shown that there are differences between males and females with respect to violence (White and Widom 2003; Ross 1996; Mihalic and Elliott 1997; Wekerle et al. 2007) but most of the previous research has not examined any other relationships other than parental or spouse. Consequently, there may be differences between males and females with respect to being victims of violence by siblings and other relatives. In addition, Wekerle et al. (2007) found that boys had a higher risk of being a victim of physical abuse whereas girls had a higher risk of being a victim of sexual abuse. Results found by Wekerle et al. (2007) suggest that males are more likely to be victimized by either males or females whereas females are more likely to be victims of abuse only by males. Perhaps the difference in being victimized by different perpetrators for males and females may cancel out the effect of sex in the full models.

An additional reason for why sex is significant in Models 2 and 6 but not Models 4 and 8 could be the result of the addition of the substance use of the offender during the incident in Models 4 and 8. Previous research has found that alcohol and/or substance use increases the likelihood of perpetrating violence (Cox et al. 2003) for both males and females (White and Chen 2002). In addition, White and Widom (2003) found that problems with alcohol "mediated the effects of child abuse and neglect on IPV [intimate partner violence] for women but not for men" (p. 341). Consequently, the effects of alcohol and/or substance use by the offender during the incident may explain or mediate the effect of sex.

Lastly, unemployment was significant in Model 12 (includes third victimization variables, household characteristics, victim characteristics and incident characteristics) but not Model 10 (includes third victimization variables, household characteristics and victim characteristics). In this research, being unemployed was associated with lower odds of living in a co-occurrence household compared to a repeat victimization household. This may be a result of a higher percentage of respondents reporting being unemployed when the third victimization occurred rather than when the first victimization occurred. Consequently, perhaps the stress of being unemployed created tension and anger in the household, particularly in the perpetrator, therefore increasing the risk of a violent victimization.

Limitations

As with any secondary analysis, there are various limitations in this research. First, living in poverty was not significant in any of the models. This is probably because the correlation between the income variable and the living in poverty variable was substantial ($\rho = -.598$, significant at the $p = 0.01$ level). Another limitation is that the youngest children who are included in the NCVS are 12 year olds. Consequently, parental abuse and sibling assaults on children younger than 12 years old cannot be studied using the NCVS. Because offender demographic characteristics (e.g., age, sex, race, education, income) were not included in the concatenated incident file from the NCVS data, the investigation of structural inequality (e.g., education and income mismatches) was also unable to be assessed. Another limitation of the research is that the findings were not as clearly indicative of processes within the family as we had initially anticipated. The meaning of the relationships of larger household size and less than high school education to co-occurrence remains ambiguous, partly due to their structural components and unmeasured family processes in the NCVS data. Lastly, the NCVS is based on self-reports by the respondents. Despite improvements in reporting of nonstranger violence, victims may have over- or under-reported the number of incidents that occurred or what exactly happened during the incident for several reasons including embarrassment, fear of reprisal, minimization of the violence encountered and selective recall. As a result, the NCVS may be biased in unknown ways.

Conclusions

The phenomenon of family violence, especially repeat victimization and the co-occurrence of violence in households, is not fully understood. There are still gaps in the literature, particularly because of the difficulty in studying and obtaining data on repeat victimization and the failure to examine other victim-offender relationships in co-occurrence cases besides spouse assaults and child abuse. This research has documented the prevalence of different patterns of violent victimization among family members using a longitudinal national dataset. One-time victimization of a family member by others in the family occurred in about 80% of family violence households. Repeated victimization of the same victim occurred in about 15% of the family violence households. Co-occurrence of violence among different victims occurred in about 5% of the family violence households. This research also found that the total number of people in the household is positively and significantly related to multiple violent victimization households, especially co-occurrence households. In addition, this research also found that victims with less than a high school education (compared to victims with a high school education) had significantly higher odds of living in a co-

occurrence household compared to a repeat victimization household. Also, respondents victimized by ex-spouses, parents/stepparents, siblings and other relatives were consistently associated with living in co-occurrence households compared to those victimized by spouses. Future research is needed in order to better understand the sequences and dynamics of family processes and interactions in repeat victimization and co-occurrence households and what can be done to prevent or diminish repeat victimization and the co-occurrence of domestic violence. This research may serve as a stimulus and guide for future research, especially in respect to the need to consider similarities and differences among the three patterns of single occurrence, repeat victimization and co-occurrence.

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