

# Reporting Patterns of Unidirectional and Bidirectional Verbal Aggression and Physical Violence Among Rural Couples

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**Abstract** In this study, we examined the occurrence of verbal aggression and physical violence along with the concordance of reporting in 517 cohabiting rural couples. More female partners reported perpetrating verbal aggression than their male partners reported being a victim. Male partners reported being a victim of physical violence more than females reported perpetrating physical violence. Female partners reported being a victim of both verbal aggression and physical violence more than males reported being a victim or perpetrator. Based on reporting patterns, the prevalence of violence varied considerably. The findings have implications for how violence is measured in couples and how prevalence is reported.

**Keywords** Domestic violence · Intimate partner violence · Report agreement · Concordance · Rural

Intimate partner violence (IPV) is a public health crisis in the United States and affects millions of people. According to the 2010 National Intimate Partner and Sexual Violence Survey, 35.6 % of females and 28.5 % of males experienced rape,

physical violence and/or stalking by an intimate partner at some point in their lifetime, with the majority experiencing physical violence (Black et al. 2011). During the 12 months prior to the survey, 3.6 % of females and 4.5 % of males reported being slapped, pushed or shoved by an intimate partner, which yields annual national estimates of 4.3 million females and 5.1 million males who are slapped, hit or shoved by a partner. The study respondents also provided information on severe forms of physical violence, including being hit, kicked, beaten or harmed with a knife or gun. The survey results revealed that 2.7 % of females and 2 % of males reported severe forms of physical IPV, which translates into national annual estimates of 3.2 million females and 2.3 million males (Black et al. 2011). In another nationally representative sample of males and females ( $n=11,291$ ), 15.6 % reported their current partner used at least one emotionally abusive behavior in the past year (Outlaw 2009).

IPV can be measured either unidirectionally or bidirectionally and prevalence rates differ based on the type of violence measured, the population that is sampled, and the respondent who provides information. Although 19.3 % of the U.S. population are rural residents<sup>1</sup> (United States Census United States Census Bureau 2012), there is little data on the extent of IPV among rural partners. A population-based study of over 25,000 people from 16 states revealed that 26.7 % of females and 15.5 % of males in rural areas reported some form of physical or sexual IPV during their lifetime (Breiding et al. 2009). However, only IPV victimization was a focus of this study, and all information was collected from the viewpoint of one person.

<sup>1</sup> According to the U.S. Census Bureau classification, ‘rural’ consists of all territory, population and housing units located outside of urbanized areas (>50,000 people) and urban clusters (>2500 people but < than 50,000 people).

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Measurement issues remain problematic for obtaining accurate estimates of the occurrence of IPV. Depending on whether one partner provides all data or whether both partners provide data – and whether they agree or disagree – can yield varying results about the prevalence of IPV. There is a lack of data on the prevalence of IPV among rural couples, and little is known about the concordance of reporting; and, we sought to address this gap. The goal of this study was to provide a reliable overview of the occurrence of verbal aggression and physical violence and the prevalence of unidirectional (male-to-female or female-to-male) and bidirectional (male-to-female and female-to-male) IPV among heterosexual couples in a rural community, by analyzing reporting patterns from both partners involved in an intimate relationship.

## Background and Significance

### The Occurrence of IPV

In a study with White ( $n=555$ ), Black ( $n=358$ ) and Hispanic ( $n=527$ ) couples, unidirectional IPV rates were 3 % male-to-female and 7 % female-to-male among White couples, 3 % male-to-female and 10 % female-to-male among Black couples, and 5 % male-to-female and 9 % female-to-male IPV among Hispanic couples (Caetano et al. 2005). Bidirectional IPV (where both members of a couple are perpetrators and victims of violence) was reported among 8 % of White couples, 20 % of Black couples and 12 % of Hispanic couples (Caetano et al. 2005).

Researchers who have examined IPV among specific populations have reported higher rates among younger couples (Caetano et al. 2005), members of racial/ethnic minorities (Black et al. 2011; Caetano et al. 2005; Field and Caetano 2004) and couples with lower socioeconomic status (Fox et al. 2002). Results from a nationally representative household survey indicated that IPV was more common among Black and Hispanic couples than non-Hispanic couples, in cohabiting couples than married couples, and inversely related to age, income and education (Kessler et al. 2001). Bidirectional IPV has been specifically examined within ethnically-diverse samples, (Caetano et al. 2005; Chang et al. 2009), as well as among young adults who are homeless (Tyler et al. 2009) and described as ‘blue-collar’ (Cunradi et al. 2011; Cunradi et al. 2009), with prevalence rates varying significantly. For example, Tyler et al. (2009) reported that 59 % of young adults ( $N=166$ ) who were homeless or had a history of running away experienced bidirectional violence, and Cunradi et al. (2011) reported physical IPV in nearly 30 % (bidirectional = 14.2 %) of blue-collar couples. We were not able to locate any studies that focused specifically on rates of bidirectional IPV among rural couples, and this appears to be a limitation within current literature. Bidirectional IPV has been

cited as the most common pattern for couples (Straus 2008, 2011), and because perpetrating IPV is one of the strongest predictors of being victimized, it is likely that perpetration and victimization co-occur (Stith et al. 2004). Thus, researchers should include measures of both unidirectional and bidirectional IPV in order to more accurately capture the occurrence of male and female perpetration and victimization.

### Methods of Measuring IPV

National surveys on IPV utilize two primary methods to collect data: 1) the proxy method, where information on IPV is collected from one member of the couple; and 2) a method that involves data from both members of a couple (Armstrong et al. 2002). When both members of a couple provide data, the prevalence of IPV has both a lower and upper bound estimate. The lower bound estimate is determined when both members of a couple agree that a violent behavior occurred, whereas the upper bound estimate is determined by counting violent occurrences reported by either partner (Schafer et al. 1998).

Several researchers have reported rates of bidirectional IPV which were assessed from only one respondent. For example, Caetano et al. (2005) considered bidirectional IPV to be “present when both male-to-female and female-to-male partner violence was reported together by either member of the dyad” (p. 396). Tyler et al. (2009) reported that 59 % of young adults experienced bidirectional violence; however, information on any violence perpetrated by both members of a couple was provided by one person. Cunradi et al. (2011) reported bidirectional violence in 14.2 % of couples. In this study, both members of a couple were asked information on IPV; yet, violence was endorsed if any one partner reported a violent act, regardless of whether it was corroborated by the other partner. In a systematic review of studies on IPV agreement between male and female partners, couples in 10 of the 15 studies disagreed on the occurrence of IPV, but there was considerable agreement on the nonoccurrence of IPV. Researchers should not assume that one partner’s reports of IPV can serve as a proxy for the other partner’s reports (Armstrong et al. 2002).

Rates of bi-directionality are “best obtained in studies that include reports from both partners in the same relationship” (Langhinrichsen-Rohling 2010, p. 186), and assessing partner violence from both members of the couple seems to have several advantages. To generate the most accurate estimates of partner violence, it is recommended that information be gathered from both members of a couple. Without this type of measurement, researchers risk biased conclusions. For example, Cunradi et al. (2009) found that single-point IPV prevalence estimates were biased and concluded that lower and upper bound estimates, based on collateral reports, should be calculated whenever possible. Obtaining reports from both partners in the same relationship is also essential to addressing

debates surrounding IPV gender symmetry (Straus 2006). Underreporting IPV has been cited, specifically when using self-report inventories (Ellsberg et al. 2001). However, concerns about the underreporting of IPV may be partially addressed by interviewing both partners of a couple because the violence that is not reported by one partner may be reported by the other (Szinovacz and Egley 1995).

Given the limited research on reporting patterns of non-physical IPV among couples, particularly in rural settings, the aims of our research were: 1) to measure the occurrence of unidirectional and bidirectional IPV among rural couples and measure the couples' agreement on acts of verbal aggression and physical violence, and 2) to estimate the prevalence of verbal aggression and physical violence among heterosexual rural couples.

## Method

### Data Source and Sample

The data were taken from a cross-sectional survey nested within the Keokuk County Rural Health Study (KCRHS), a population-based prospective cohort study conducted in a single county in the state of Iowa. Keokuk County is an entirely rural county and no town exceeds a population of 2500. Participating households were randomly selected from a list of all county households. Data collection, with 1,002 families, took place between 1999 and 2004 (Stromquist et al. 2009). Each study participant over the age of 18 completed a medical and mental health screening and was interviewed in a clinic by trained staff members to investigate injury and disease incidence related to environmental exposures (Merchant et al. 2002). If two intimate partners in a household completed the survey, each partner was interviewed separately. For more detailed descriptions of the sampling methods used in the KCRHS, see Merchant et al. (2002) and Stromquist et al. (2009).

The current analysis was conducted utilizing data from Round 2, which included interviews of 1678 individuals over the age of 18 (Stromquist et al. 2009). Participants were included in the study sample if two intimate partners in a household completed the survey ( $n=1,120$ ). Forty-eight participants were excluded because an intimate partnership between household members could not be established due to discrepancies in reported relationship status (e.g., male partner reports divorced, female partner reports married). Thirty-eight additional participants were excluded due to missing data. The final sample consisted of 1034 individual participants, representing 517 couples. All couples were heterosexual, although this was not a criterion for inclusion in the study. The majority of the cohort was White (98 %); thus, race was not considered in the analysis because of insufficient variation.

## Measures

**Intimate Partner Violence** The Conflict Tactics Scale (CTS; Straus 1979) was used to assess aggressive acts between members of each couple. The CTS consists of 19 items across multiple subscales that focus on reasoning, verbal aggression, and physical violence (Cronbach's  $\alpha$ 's=.73 to .88) (Straus 1979). In this study, we utilized two modified subscales to capture acts of verbal aggression and physical violence. Verbal aggression was measured by three items. Each member of the couple was asked if his/her partner 'insulted or swore at you,' 'stomped out of the room' and 'did or said something to spite you.' Physical violence was measured by nine items, including 'threw something at you,' 'pushed, grabbed or shoved you,' 'hit or tried to hit you with something,' 'beat you up' and 'used a knife or fired a gun on you.' Each member of the couple was also asked if s/he perpetrated the behaviors using the verbal aggression and physical violence subscales. The reference period for each CTS item was the past 12 months. The response options for the CTS items were assessed on a 5-point scale that ranged from 0 = 'never' to 4 = 'daily.' Our focus was on the occurrence of each item rather than its frequency. Thus, we coded each of the responses to reflect whether the item occurred in the past 12 months (0 = no; 1 = yes).

We conducted analyses with individual CTS items as well as an overall experience variable (yes/no) for each subscale. The overall experience variable was constructed by identifying participants who reported violence in any of the individual CTS items and creating a dichotomous variable (0 = no violent experience; 1 = at least one violent experience).

We examined four reporting patterns for IPV: 1) the male partner reported at least one event but the female partner did not (MYFN; male yes, female no); 2) the female partner reported at least one event but the male partner did not (MNFY; male no, female yes); and 3) the male and female partners agreed that at least one aggressive act occurred (MYFY; male yes, female yes) or 4) the male and female partners reported no aggressive acts (MNFN; male no, female no).

The unidirectional violence variables reflect when partners reported only unidirectional violence and no bidirectional violence. The bidirectional violence variables measured when both the male and female partner reported perpetrated violence. For example, a male partner may report pushing, grabbing or shoving his female partner and also report that his female partner threw something at him. However, the matched female partner may not report any perpetration. In this case, the couple would be coded as MYFN for any bidirectional physical violence. Because of the complex coding that examines the reporting patterns as well as the directionality of the violence, the 'any violence' categories are not the sums of individual reports.

To examine reporting patterns of verbal aggression and physical violence, we used similar procedures to measure the agreement and disagreement of reports between partners. We created dichotomous variables for each perpetration and victimization CTS subscale question (0 = no occurrence; 1 = occurrence) for each partner. Using the dichotomous variables for male report of perpetration and female report of victimization, we created a variable for each CTS item and overall subscale to measure the overall couple report of male perpetration (0 = neither report occurrence; 1 = only male reports occurrence; 2 = only female reports occurrence; 3 = both report occurrence). We followed the same process to create a variable for each CTS item and overall subscale to measure female perpetration.

We created two dichotomous variables for each CTS item and the overall subscale score to measure the male report of bidirectional violence and the female report of bidirectional violence (0 = partner does not report; 1 = partner does report). Using these dichotomous variables, we created a partner report variable for each item and the overall subscale (0 = neither report occurrence; 1 = only male reports occurrence; 2 = only female reports occurrence; 3 = both report occurrence). We, then, used the unidirectional (one partner perpetrates) and bidirectional item-level and overall subscale variables to indicate that only unidirectional and not bidirectional violence was present in the relationship. Couples were considered negative for unidirectional violence if either partner reported bidirectional violence.

### Analysis Plan

To address the three study aims, our analyses required several steps. First, we examined the occurrence of verbal aggression and physical violence among the couples in the sample. Based on reports from the male and female member of each couple, we documented the occurrence of each CTS item and the two ‘overall’ subscales (whether any item in the subscale occurred). For the overall verbal aggression and physical violence subscales, we calculated the concordance between partners for reporting of any male-to-female violence, any female-to-male violence, and bidirectional violence using McNemar’s test. McNemar’s test evaluates differences in paired responses when two subjects are not independent (McNemar 1947). In this case, it is used to compare the proportion of reports made by male or female participants when only one partner reports violence. We did not conduct McNemar’s tests on individual CTS items because there were too few acts to analyze in many cases.

Next, we calculated the prevalence of violence among rural couples: only male-to-female violence, only female-to-male violence, and bidirectional violence. The prevalence estimates represent the proportion of rural couples in the sample who reported verbal aggression or physical violence. The

prevalence estimates included lower bound, male reported, female reported, and upper bound estimates. A lower bound estimate represents the prevalence of violence if both partners were surveyed and agreed about the occurrence of violence. The male reported estimates were calculated based upon only the male report of violence and represent the prevalence of violence if we only surveyed the male partner. The female reported estimates were calculated based upon only the female report of violence and represent the prevalence of couples positive for violence if we only surveyed the female partner. Upper bound estimates represent the prevalence if both partners were surveyed and either male or female partner reported violence; agreement was not required.

All analyses were performed using SAS (version 9.3, SAS Institute Inc., Cary, NC).

## Results

### Demographic Characteristics

There were a total of 517 heterosexual couples in this sample (Table 1). The mean age of the sample was 54.7 years, with a range of 21 to 87 years. The majority of both female (64.8 %) and male (71.8 %) participants were employed, and 23.0 % of male and 14.9 % of female partners had earned a college degree. A substantial percentage of couples in this sample were married (97.1 %), and nearly half resided in a small town (49.7 %). Within the past year, at least one act of verbal aggression and physical violence occurred in 74.3 % and 9.1 % of couples, respectively.

### Reporting Patterns of Verbal Aggression in Couples

**Unidirectional** In 22.6 % ( $n=117$ ) of couples, at least one partner reported male-to-female verbal aggression (Table 2). In 16.3 % ( $n=84$ ) of couples, at least one partner reported female-to-male verbal aggression. The most common form reported by any or both partners was stomping out of the room, yard or house. Corroboration between partners about the occurrence of unidirectional verbal aggression was low. In only 5.2 % of couples ( $n=27$ ), both partners of the couples reported that any male-to-female verbal aggression had occurred. However, the partners did not necessarily agree about each act of verbal aggression (e.g., male reported insulting partner and while female reported that her partner stomped out of the room). Thus, the MYFY any verbal aggression totals are not necessarily be sums of the MYFY item-specific numbers.

Approximately 17 % of couples ( $n=90$ ) disagreed about the occurrence of male-to-female aggression (Table 2). The percentage of partners who reported unidirectional male-to-female aggression differed significantly

**Table 1** Demographic statistics of sample

Variable	
Individual-level characteristics ( <i>n</i> =1,034)	
Mean age in years	Mean (SD)
Male partner (range: 22–87)	56.11 (15.07)
Female partner (range: 21–83)	53.3 (14.59)
College graduate	<i>n</i> (%)
Male partner	77 (14.89)
Female partner	119 (23.02)
Employed	<i>n</i> (%)
Male partner	371 (71.76)
Female partner	335 (64.80)
Couple-level characteristics ( <i>n</i> =517)	
Currently married	502 (97.1)
Have children	337 (34.82)
Own home	476 (92.07)
Location of residence	
Town	257 (49.71)
Not in town (rural)	260 (50.29)
Any report of verbal aggression	384 (74.27)
Any report of physical violence	47 (9.09)

by gender ( $p=.001$ ). Of the couples who disagreed about male-to-female verbal aggression ( $n=90$ ), most had verbal aggression reported only by the female partner (88.9 %;  $n=80$ ). Similarly, less than 1 % of couples ( $n=5$ ) agreed that female-to-male verbal aggression had occurred, while 15.3 % ( $n=79$ ) of couples disagreed that female-to-male verbal aggression had occurred. The remaining 83.8 %

( $n=433$ ) of the sample agreed that female-to-male verbal aggression had not occurred. The percentage of partners who reported unidirectional female-to-male verbal aggression differed significantly by gender ( $p<0.001$ ). Of the couples who disagreed, most had verbal aggression reported by only the female partner (69.6 %,  $n=55/79$ ).

**Bidirectional** In the sample, 39.7 % of couples concurred that there was no bidirectional verbal aggression in their relationship (Table 2). Doing or saying something to spite their partner was the most commonly reported form of bidirectional verbal aggression reported by only male partners (13.5 %,  $n=70$ ) and only female partners (18.6 %,  $n=96$ ). Insulting or swearing at the partner was the most common form of bidirectional verbal aggression reported by both partners (11.4 %,  $n=59$ ). A total of 312 couples reported bidirectional verbal aggression (sum of MYFY = 148, MYFN = 73, MNFY = 91). In contrast to the unidirectional forms of violence, a higher percentage of couples agreed about the perpetration of bidirectional violence (29 %,  $n=148$ ). For MYFY bidirectional violence to occur, both partners must have reported at least one form of male-to-female perpetration and female-to-male perpetration. Thus, the total of 148 couples reporting MYFY bidirectional verbal aggression is not the sum of couples who agreed about specific bidirectional forms (e.g., insulting a partner, stomping out of a room, or doing or saying something to spite another). The McNemar’s test indicated that the percentage of partners who reported bidirectional verbal aggression did not differ by gender ( $p=0.16$ ). Of the 164 couples who disagreed about the occurrence of violence, 91 (55.5 %) had verbal aggression reported by only a female partner.

**Table 2** Perpetration of verbal aggression among couples (*n*=517)

	MYFN <i>n</i> (%)	MNFY <i>n</i> (%)	MYFY <i>n</i> (%)	MNFN <i>n</i> (%)	McNemar’s test
Only male perpetration (Male-to-Female)					
Any verbal aggression	10 (1.93)	80 (15.47)	27 (5.22)	400 (77.37)	54.44, $p<0.001$
Insulted or swore at partner	27 (5.22)	22 (4.26)	2 (0.39)	466 (90.14)	
Stomped out of the room, yard or house	33 (6.38)	32 (6.19)	6 (1.16)	446 (86.27)	
Did or said something to spite partner	29 (5.61)	30 (5.80)	5 (0.97)	453 (87.62)	
Only female perpetration (Female-to-Male)					
Any verbal aggression	24 (4.64)	55 (10.64)	5 (0.97)	433 (83.75)	12.16, $p=0.001$
Insulted or swore at partner	31 (6.00)	51 (9.86)	9 (1.74)	426 (82.40)	
Stomped out of the room, yard or house	39 (7.54)	52 (10.06)	13 (2.51)	413 (79.88)	
Did or said something to spite partner	35 (6.77)	37 (7.16)	4 (0.77)	441 (85.30)	
Bidirectional					
Any verbal aggression	73 (14.12)	91 (17.60)	148 (28.63)	205 (39.65)	1.98, $p=0.16$
Insulted or swore at partner	52 (10.16)	62 (11.99)	59 (11.41)	344 (66.54)	
Stomped out of the room, yard or house	57 (11.03)	69 (13.35)	41 (7.93)	350 (67.70)	
Did or said something to spite partner	70 (13.54)	96 (18.57)	55 (10.64)	296 (57.25)	

MYFN male reported act occurred, female did not report act occurred (male yes, female no), MNFY male did not report act occurred, female reported act occurred (male no, female yes), MYFY both partners reported act occurred (male yes, female yes, MNFN neither partner reported act occurred (male no, female no)

**Reporting Patterns of Physical Violence in Couples**

**Unidirectional** In 2.9 % ( $n=15$ ) of couples, at least one partner reported male-to-female physical violence, and in 4.6 % ( $n=24$ ) of couples, at least one partner reported female-to-male physical violence (Table 3). Very few partners agreed about the perpetration of these forms of physical violence; only one out of 15 couples reporting male-to-female violence and one out of 24 couples reporting female-to-male violence agreed about the occurrence of violence. Of couples who disagreed about unidirectional physical violence, most had violence reported by only the victim (Table 3). Being pushed, grabbed, or shoved by a partner and having something thrown at them were most commonly reported by victims of both male-to-female and female-to-male violence. For female-to-male violence, slapping their partner was the most common form of physical violence perpetration reported by female

partners ( $n=4$ ). Our McNemar’s test found the percentage of partners who reported both male-to-female and female-to-male physical violence differed significantly by gender ( $p=0.01$ ).

**Bidirectional** Bidirectional physical violence was less commonly reported than bidirectional verbal aggression. Nearly all couples (97.1 %,  $n=502$ ) agreed that there was no bidirectional physical violence in their relationship (Table 3). Pushing, grabbing, or shoving between partners was the form of physical violence most commonly reported by male partners (1.2 %,  $n=6$ ) and both partners (0.4 %,  $n=2$ ). Throwing something at each other was the form of physical violence most commonly reported by female partners (0.6 %,  $n=3$ ). A total of 15 couples reported bidirectional physical violence. Of those couples, 27 % ( $n=4$ ) agreed about the occurrence of violence. Our McNemar’s test found the percentage of

**Table 3** Perpetration of physical violence among couples ( $n=517$ )

	MYFN $n$ (%)	MNFY $n$ (%)	MYFY $n$ (%)	MNFN $n$ (%)	McNemar’s test	
<b>Only male perpetration (Male-to-Female)</b>						
Any physical violence	2 (0.39)	12 (2.32)	1 (0.19)	502 (97.10)	7.14, $p=0.013$	
Threw something at partner	0	6 (1.16)	0	511 (98.84)		
Pushed, grabbed, or shoved partner	4 (0.77)	11 (2.13)	1 (0.19)	501 (96.91)		
Slapped partner	0	2 (0.39)	0	515 (99.61)		
Kicked, bit, or hit partner with a fist	0	2 (0.39)	0	515 (99.61)		
Hit or tried to hit partner with something	0	5 (0.97)	0	512 (99.03)		
Beat partner up	0	1 (0.19)	0	516 (99.81)		
Threatened partner with a knife or gun	0	1 (0.19)	0	516 (99.81)		
Used a knife or fired a gun at partner	0	1 (0.19)	0	516 (99.81)		
<b>Only female perpetration (Female-to-Male)</b>						7.34, $p=0.011$
Any physical violence	18 (3.48)	5 (0.97)	1 (0.19)	493 (95.36)		
Threw something at partner	12 (2.32)	2 (0.39)	1 (0.19)	502 (97.10)		
Pushed, grabbed, or shoved partner	12 (2.32)	3 (0.58)	0	502 (97.10)		
Slapped partner	6 (1.16)	4 (0.77)	0	507 (98.07)		
Kicked, bit, or hit partner with a fist	5 (0.97)	2 (0.39)	0	510 (98.65)		
Hit or tried to hit partner with something	6 (1.16)	2 (0.39)	0	509 (98.45)		
Beat partner up	3 (0.58)	0	0	514 (99.42)		
Threatened partner with a knife or gun	2 (99.81)	0	0	514 (99.42)		
Used a knife or fired a gun at partner	2 (99.81)	0	0	514 (99.42)		
<b>Bidirectional</b>					0.82, $p=0.37$	
Any physical violence	7 (1.35)	4 (0.77)	4 (0.77)	502 (97.10)		
Threw something at partner	2 (0.39)	3 (0.58)	0	512 (99.03)		
Pushed, grabbed, or shoved partner	6 (1.16)	2 (0.39)	2 (0.39)	507 (98.07)		
Slapped partner	1 (0.19)	1 (0.19)	1 (0.19)	514 (99.42)		
Kicked, bit, or hit partner with a fist	1 (0.19)	0	0	516 (99.81)		
Hit or tried to hit partner with something	1 (0.19)	0	0	516 (99.81)		
Beat partner up	1 (0.19)	0	0	516 (99.81)		
Threatened partner with a knife or gun	1 (0.19)	0	0	516 (99.81)		
Used a knife or fired a gun at partner	1 (0.19)	0	0	516 (99.81)		

MYFN male reported act occurred, female did not report act occurred (male yes, female no), MNFY male did not report act occurred, female reported act occurred (male no, female yes), MYFY both partners reported act occurred (male yes, female yes), MNFN neither partner reported act occurred (male no, female no)

partners who reported bidirectional physical aggression did not differ by gender ( $p=0.37$ ). Of the 11 couples who disagreed about the occurrence of violence, 64 % ( $n=7$ ) had physical violence reported by only a male partner.

**Estimated Prevalence Rates of Violence**

For each type of violence, the range of estimated prevalence rates per 1000 couples are presented in Table 4. The upper bound estimates for physical violence were dramatically greater than the lower bound estimates. For example, the upper bound estimate for female-to-male physical violence was 46/1000, which was 23 times greater than the lower bound of 2/1000. The discrepancies between the upper bound and lower bound estimates were smaller for verbal aggression but were still substantial (four times greater for male-to-female verbal aggression, 16 times greater for female-to-male aggression, and two times greater for bidirectional aggression). Prevalence rates of all directions of verbal aggression were higher for female reported violence than for male reported violence. In contrast, prevalence rates for physical violence were higher for male reported violence than for female reported violence with the exception of male-to-female violence.

**Discussion**

Little is known about the prevalence of IPV among rural couples and reliable population-based prevalence rates are needed (Breiding et al. 2009). The purpose of this study was to assess the prevalence of verbal aggression and physical violence among rural couples, to determine a couple’s level of agreement and to examine how prevalence might change based on the respondent. Our sample included respondents from a

population-based, prospective study of residents in one rural Iowa county. According to Breiding et al. (2009), 22.8 % of women and 11.8 % of men living in rural Iowa reported lifetime physical and/or sexual IPV victimization. Some acts that Breiding et al. (2009) used to measure physical violence were similar to what was included in our study (e.g., hit, slap, push), and we found that 9.1 % of couples reported physical violence. Unlike Breiding et al.’s focus on lifetime prevalence, reports of IPV in our study were measured within the past 12 months, and we included items on verbal aggression rather than sexual victimization. We found that verbal aggression occurred in 74.3 % of couples within the past 12 months.

We examined the occurrence of verbal aggression and physical violence based on reporting patterns from both the male and female members of a couple, which allowed us to assess the level of agreement between partners. Similar to the results of Armstrong et al.’s (2002) review, we found high levels of agreement on the non-occurrence of physical violence. Approximately 95–99 % of couples in our sample were in agreement on the non-occurrence of physical violence in their relationship. The agreement on the non-occurrence of verbal aggression among couples in their sample was lower, with a range of 39–87 % depending on the specific act of aggression and whether it was unidirectional or bidirectional.

With respect to agreement on occurrence, we found that about half of all partners with any report of bidirectional verbal aggression agreed on the occurrence of bidirectional verbal aggression, while about a quarter of couples with any report of bidirectional physical violence agreed on the occurrence of bidirectional physical violence. Few couples agreed about unidirectional verbal aggression, and unidirectional physical violence agreement was also low. The lower agreement among couples on physical violence may be due to one’s view that acknowledging the perpetration of verbal aggression

**Table 4** Range of partner violence prevalence rate estimates per 1000 couples

	Lower bound estimate <sup>a</sup> per 1000 couples	Male report <sup>b</sup> per 1000 couples	Female report <sup>c</sup> per 1000 couples	Upper bound estimate <sup>d</sup> per 1000 couples
Only male-to-female violence				
Verbal aggression	52	72	207	226
Physical violence	2	6	25	29
Only female-to-male violence				
Verbal aggression	10	56	116	163
Physical violence	2	37	12	46
Bidirectional violence				
Verbal aggression	286	428	462	604
Physical violence	8	21	15	29

<sup>a</sup> Estimated prevalence if both partners are surveyed and agreement between partners about occurrence is required  
<sup>b</sup> Estimated prevalence if only the male partner is surveyed  
<sup>c</sup> Estimated prevalence if only the female partner is surveyed  
<sup>d</sup> Estimated prevalence if both partners are surveyed and agreement between partners about occurrence is not required

is more palatable than reporting one's own perpetration of physical violence against a partner. Low agreement among couples, in general, may be due to social desirability or a desire to portray their partner in a certain light (Simpson and Christensen 2005).

Disagreement on experiences of IPV may also result from misclassification, based on differences in definition of IPV experiences and recall bias. Items on measures, such as the CTS, may also not be objective enough to capture 'true' measures of violence within a couple. For example, 'beat up' or doing things to 'spite' partner may have different meanings across respondents (Simpson and Christensen 2005). Certain types of personalities may also be more or less likely to report their behaviors. Freeman et al. (2014), for example, found that men who had lower levels of impression management were less likely to underreport. It is possible that more behaviorally-specific and objective acts of violence, such as those resulting in physical injury or contact with medical care, are more readily recalled and quite possibly, more accurately recalled. Yet, capturing nuanced forms of violence, such as verbal aggression, is just as critical and requires similar attention from a prevention standpoint. Ultimately, future research on measurement of IPV must consider these nuances, and when interested in measuring prevalence of IPV, investigators should include lower and upper estimates.

Although there were differences in reporting patterns for male-perpetrated, female-perpetrated, and bidirectional violence, only the reporting patterns for female and male perpetration were statistically significant. Among couples with female-to-male violence, we found that female partners were significantly more likely to report perpetrating verbal aggression than male partners were to report being the victim of verbal aggression. In contrast to verbal aggression, male partners were significantly more likely to report being the victim of physical violence than females were to report perpetrating physical violence. Among couples with male-to-female violence, we found that female partners were significantly more likely to report being the victim of verbal aggression than male partners were to report being the perpetrator of verbal aggression. This reporting trend persisted with physical violence. Male partners were significantly less likely to report being the perpetrator of physical violence than females were to report being the victim of physical violence. These trends may have underpinnings in the cultural acceptance of different types of gender behavior, which can influence memory (Martin and Jones 2012). Our culture may be more accepting of females using verbal or psychological methods of abuse than males, and because this behavior is more accepted among females, males may be less likely to report being a victim of this behavior. Along these trends, females may be perceived as less likely to use physical aggression, which may be more 'memorable' to males because this behavior breaks from their traditional gender expectations.

Our finding that females reported perpetrating more verbal aggression than males reported experiencing was consistent with higher reports of female-perpetrated psychological aggression found by Panuzio et al. (2006); however, this generally conflicts with the results of prior studies. For example, Browning and Dutton (1986) found that male partners viewed their relationship as mutually violent whereas female partners reported greater male-perpetrated violence. Jouriles and O'Leary (1985) found that males underreported their own abusive behavior while females overreported the violence by their male partners, and Perry and Fromuth (2005) found that males report less of their own IPV perpetration to a greater extent than females. According to Simpson and Christensen (2005), both males and females reported their partner committed more aggressive acts than they reported about themselves, and O'Leary and Williams (2006) found that both males and females reported less abusive behavior about themselves than their partners reported about them. The differences among our findings and those of other researchers are partially due to how IPV was assessed and whether single (e.g., only physical) or multiple types of abuse (e.g., physical and verbal) were measured, as well as whether specific types of abuse were examined separately versus in combination.

### Limitations and Strengths

As with all research, there were limitations to our study. These data come from a population-based cohort in a single, rural county and might not be generalizable to other populations. For example, rural Midwest populations tend to be predominantly White, and this cohort was 98 % White. Data on IPV were collected only from cohabiting, adult couples, which excluded violence from former partners. The CTS measure used, although helpful as a commonly used measure of intimate partner violence in populations, does not capture battering behaviors or sexual violence. In addition, these items measure several specific forms of verbal aggression housed within the context of an argument, which do not capture a broader range of verbally abusive behaviors. Finally, although we were able to focus on incidents of verbal and physical aggression in the discrete time period of 1 year, our findings might be different with a more specific time frame. More reliable results might be obtained if both members of the couple were asked about the most recent incident, rather than about an overview of the past year (Armstrong et al. 2002).

We were also limited to the variables included in the dataset and not able to examine factors that may influence the level of agreement/disagreement among couples. For example, Marshall et al. (2011) found that for both male and female partners, relationship satisfaction was associated with reporting concordance. These researchers found that high relationship satisfaction was associated with reporting less of a partner's physical aggression than was reported by the partner, while

low relationship satisfaction was associated with reporting more of a partner's physical aggression than was reported by the partner. Although Simpson and Christensen (2005) found that marital satisfaction was not associated with agreement on acts of violence among couples, marital satisfaction among rural couples has not been explored in this fashion and should be considered in future research studies. Finally, our study is limited to the sample of mostly married couples from a rural county Iowa and thus cannot be generalized to other populations. However, the methods we used can be applied to other populations of interest.

Despite these limitations, our study also had several strengths. This study drew on a population-based cohort of rural households, and its large sample of rural couples is unique to the literature. Furthermore, the questions about violence were housed within a longer survey of many health and wellness outcomes, so response bias was likely reduced compared with surveys that have a focus specifically on violence. Finally, we were able to compare independent reports of violence victimization and perpetration which is unusual in most studies.

## Conclusion

Researchers who examine the prevalence of IPV based on reports from only one partner may be underestimating the true prevalence, especially for verbal aggression. As more studies are conducted to measure these differences, stable estimates for correcting these reporting biases may become available. In addition to implications for reporting the occurrence of violence, our findings also suggest that members of a couple experience and interpret the violence in their relationship differently. Researchers that examine the causes for these differences may help to hone intervention strategies by gender and based on the agreement/disagreement of the experience of violence by each partner.

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