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IS IT THE EXCEPTION OR THE RULE? DAILY CO-OCCURRENCE OF PHYSICAL, SEXUAL, AND PSYCHOLOGICAL PARTNER VIOLENCE IN A 90-DAY STUDY OF SUBSTANCE-USING, COMMUNITY WOMEN

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Abstract

Objective—This study aims to describe the daily co-occurrence of physical, sexual, and psychological intimate partner violence (IPV) among substance-using, community-based women currently experiencing IPV.

Methods—A micro-longitudinal study design was used to collect data daily from 49 women for 90 days.

Results—On the majority of days (62%), no IPV occurred; 27% of days were characterized by psychological IPV alone, followed by the co-occurrence of psychological and physical IPV (6% of IPV days). Results of person-level analyses showed comparable sized correlations between the proportion of days with physical and sexual IPV and the proportion of days with physical and psychological IPV. However, results of day-level analyses revealed that the association between physical and psychological IPV was much stronger than the association between physical and sexual IPV; Physical IPV was 64 times more likely to occur on days when psychological IPV occurred.

Conclusions—Results revealed new information about physical, sexual, and psychological IPV experiences and demonstrate the utility of a micro-longitudinal design among this high risk population. Implications for practice, future research, and the development of preventive interventions are noted, underscoring the importance of psychological IPV and the range of IPV experiences among women.

Keywords

Physical intimate partner violence; Sexual intimate partner violence; Psychological intimate partner violence; Co-occurrence; Community Women; Substance Use

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Findings of cross-sectional studies have demonstrated that physical, sexual, and psychological victimization co-occur among women who experience intimate partner violence (IPV) (Basile & Hall, 2011; Coker et al., 2002; Coker, Smith, McKeown, & King, 2000; Hedtke et al., 2008; Mechanic, Weaver, & Resick, 2008). This emerging body of research has been fundamental to raising awareness about the co-occurrence of multiple types of victimization, showing that there are strong associations among types across samples. However, this literature is limited in that most studies collected retrospective data about average levels of IPV over time and drew inferences about daily experiences from correlations based on such data. Therefore, a gap in the literature exists such that no study has been designed to elucidate the phenomenon of IPV as it is experienced by women – day-to-day. An approach that can describe the daily experiences of physical, sexual, and psychological IPV and their co-occurrence by gathering data in near real-time will more accurately capture women's lived experiences (Hektner, Schmidt, & Csikszentmihalyi, 2007; Stone, Shiffman, Alienza, & Nebeling, 2007). Results from such studies can better inform the development of more effective prevention and intervention programs, including those that target proximal relationships between IPV victimization and various antecedents, correlates, and consequences. Therefore, this study uses a micro-longitudinal design to describe the daily co-occurrence of physical, sexual and psychological IPV among substance-using, community-based women as a starting point to inform practice, future research, and potentially, policy.

Though increasing numbers of studies have simultaneously examined physical, sexual, and psychological IPV, few have focused explicitly on identifying the co-occurrence among two or more types (Basile & Hall, 2011; Coker et al., 2002; Coker et al., 2000; Hedtke et al., 2008; Mechanic et al., 2008). In 2000 and 2002, Coker and colleagues were the first to examine the co-occurrence of IPV types. Findings showed that, of the women who reported experiencing IPV in past, recent, or current relationships, 77% reported physical or sexual IPV, and 23% reported psychological IPV. The co-occurrence among types was common as was the prevalence of non-overlapping psychological IPV. Recent studies have confirmed the finding that there is substantial co-occurrence among types, regardless of whether data were reported by victims or perpetrators (Basile & Hall, 2011; Hedtke et al., 2008). Further, findings suggest that length of exposure to IPV increases the likelihood of experiencing multiple types (Thompson et al., 2006), and experiencing multiple types has a cumulative effect on victims' mental and physical wellbeing (Edwards, Black, Dhingra, McKnight-Eily, & Perry, 2009; Hedtke et al., 2008). More common than research that explicitly focuses on the co-occurrence of IPV types is research that focuses on the differential relationships of precursors, correlates, and outcomes of IPV *by* type. Regarding IPV outcomes, for instance, there is overwhelming evidence that physical, sexual, and psychological IPV are associated with various negative mental, physical and reproductive health problems (Bonomi et al., 2009; Breiding, Black, & Ryan, 2008; Campbell, 2002; Campbell et al., 2002; Ellsberg, Jansen, Heise, Watts, & Garcia-Moreno, 2008; Plichta, 2004; Resnick, Acierno, & Kilpatrick, 1997). For example, the type of social reactions victims experience when they disclose IPV to others appears to differ by the type of IPV disclosed (Sullivan, Schroeder, Dudley, & Dixon, 2010), and all three IPV types have been linked to IPV-related posttraumatic stress (Sullivan, Cavanaugh, Buckner, & Edmondson, 2009).

Psychological IPV has been shown to uniquely contribute to the prediction of depression symptoms (Mechanic et al., 2008) and posttraumatic stress symptoms after controlling for the effects of physical IPV (Mechanic et al., 2008) and in several studies, was as strong a predictor of negative health outcomes as physical IPV (Becker, Stuewig, & McCloskey, 2010; Coker et al., 2002; Pico-Alfonso et al., 2006). Psychological IPV also has been associated with more drug use, chronic disease (Coker et al., 2002), unemployment (Kimerling, Alvarez, Pavao, Kaminski, & Baumrind, 2007) and smoking; with the co-

occurrence of physical IPV enhancing this risk (Jun, Rich-Edwards, Boynton-Jarrett, & Wright, 2008).

Sexual IPV also affects health outcomes, especially when co-occurring with physical IPV, which is often the case (Logan, Cole, & Shannon, 2007). Women with sexual IPV, whether or not they also experienced physical IPV, were more likely to have one or more chronic stress related problems (high blood pressure, digestive problems, abdominal pain) central nervous system symptoms (headaches, seizures, fainting, back-pain) and gynecological problems (Campbell et al., 2002). Women with both sexual and physical IPV appear to be at higher risk for severe psychological distress than women with sexual IPV alone (Edwards et al., 2009) and are more likely to seek medical care than those experiencing psychological IPV alone (Duterte et al., 2008). Further, sexual IPV severity explained a large amount of variance in PTSD severity beyond what was explained by physical IPV (Bennice, Resick, Mechanic, & Astin, 2003; Smith, White, & Holland, 2003). Sexual IPV has an incremental impact on PTSD and depression even in the context of high severity of other IPV types (Dutton, Kaltman, Goodman, Weinfurt, & Vankos, 2005). The adverse health effects for women experiencing sexual IPV alone or in conjunction with physical IPV highlights the additional burden of sexual IPV on both mental and physical well-being (Bonomi, Anderson, Rivara, & Thompson, 2007).

Although the existing research regarding the co-occurrence of IPV types has been critical to moving the field forward, it is limited in that the majority of studies were cross-sectional and retrospective in nature and utilized aggregated data over longer periods to draw inferences. More specifically, findings of existing research on the co-occurrence of IPV types are inferences drawn about daily experiences based on average levels of IPV experienced across a given period of time (typically periods of 6 to 12 months or more). A micro-longitudinal study design, on the other hand (a) captures data frequently and in near real-time, (b) assesses experiences and behaviors as they unfold in their natural environment and (c) improves reliability and validity of data by reducing recall bias (Csikszentmihalyi & Larson, 1987; Gruenewald et al., 2002; Tennen & Affleck, 1996). Such study designs are also critical for drawing inferences at the appropriate level of analysis and thus avoiding the problem of the ecological fallacy whereby data, because they have been aggregated for a group, misrepresent the experiences of individuals in that group (Robinson, 1950; Tennen & Affleck, 1996; Tennen, Affleck, & Armeli, 2003). In fact, research has demonstrated that results of analyses based on data aggregated for a group can differ from analyses based on daily data in magnitude and even in direction, (Tennen & Affleck, 1996; Tennen et al., 2003) thereby misrepresenting the experiences of individuals and perhaps, misinforming the development of practices and policies. We are interested in addressing questions about the occurrence of particular IPV types *on days when* other IPV types occur (day level), which is different than addressing whether individuals who report high levels of one type of IPV also report high levels of other types of IPV (person level). Findings of research using micro-longitudinal methods contextualize IPV within women's lived experiences (Hektner et al., 2007). These methods allow researchers to be relatively more confident that findings reflect actual experiences than findings gathered with methods that require retrospection over longer periods. Accurate information about the frequency of occurrence and co-occurrence of physical, sexual, and psychological IPV is critical. This information can be utilized to inform changes in public perceptions and public policy regarding IPV victims and offenders, allocate valuable resources to the most needed services, shift norms regarding IPV so that all types are universally unacceptable, and ultimately, reduce IPV altogether. For example, many service providers work based on the assumption that when IPV is present in a relationship, physical IPV acts occur very frequently. As a result, providers often focus their efforts with women on keeping them safe, for example by developing safety plans (Basile, Hertz, & Back, 2007). Of course physical safety should be paramount. However, attention

also should be paid to co-occurring psychological and sexual IPV. This is important to highlight since psychological IPV is more often overlooked by providers (and certainly by policy makers) than any other form of IPV but given it's frequency and associated negative sequelae (Baldry, 2003; Follingstad, 2009; Pico-Alfonso, 2005; Straight, Harper, & Arias, 2003) is worthy of more attention.

The compendium of research to date underscores the importance of investigating IPV by types and identifying the differential effects of the various types (Campbell & Lewandowski, 1997; Hedtke et al., 2008). It also suggests that the co-occurrence of IPV victimization may be a distinct type of IPV (Bennice et al., 2003; Smith et al., 2003) that warrants further research. Understanding the prevalence and frequency of IPV types independently and as they co-occur on a daily basis is a starting point to enable the field to more effectively address the potential risks associated with IPV types, especially when co-occurrence is present, and to develop more targeted interventions and policies.

METHODS

Participants

The final sample of women (N = 51) was drawn from a larger study (N = 147) examining the efficacy and comparability of different methods of daily reporting among women currently experiencing IPV (Sullivan, Khondkaryan, Dos Santos, & Peters, 2011). We focused on the sub-group that utilized telephone data collection methods (otherwise known as interactive voice response [IVR]), selected for its ease of use and compliance verification capabilities (Stone, Shiffman, Schwartz, Broderick, & Hufford, 2003; Tennen, Affleck, Coyne, Larsen, & DeLongis, 2006). All women participated in baseline and follow-up assessments and recorded event-data on IPV and related issues on a daily basis for 90 days. IRB approval was obtained by the [Institutions] Human Investigation Committee, the body that reviews studies to ensure protection of human research participants.

Two of the 51 women who participated in the telephone data collection condition never called into the phone system to complete the daily survey. Therefore, data from the 49 women who completed a daily telephone survey at least once are the focus of these analyses. Demographic information was obtained during the baseline interview. The average age of the 49 women was 39 years (*SD* = 10.8). Most women were unemployed for over a month prior to the study (55.1%), with a mean level of education of 12 years (*SD* = 1.1) and a mean annual household income of $12,817 (*SD* = $10,540). Only 12.2% of women were married although over half were living with their partner or saw him on a daily basis (*M* = 6.4 days a week, *SD* = 1.3). Mean years in the current relationship was 7. 5 (ranging from 6 months to 25 years; *SD* = 6.8) and 22.4% of women had children. Thirty-nine women were African American, four were White, four were Latina, and two were identified as multiracial.

Procedures

Participants were recruited from an urban community in the Northeast. Recruitment materials were posted in local businesses, selected state/public agencies, and in waiting rooms, bathrooms, and exam rooms of urban-area primary care clinics and emergency departments. Eligibility was determined via a phone screen. Inclusion criteria were: (a) female gender, (b) age 18 or older, (c) the use of any amount of drugs or alcohol in the previous 30 days (because an aim of the larger project was to understand the relationship of substance use to IPV), (d) current involvement in a heterosexual intimate relationship of at least six months duration with current contact at least twice a week, (e) experience of physical victimization in the past 30 days by the woman's current male partner as measured by selected screening questions from the Conflict Tactics Scale-2, CTS-2 (Straus, Hamby,

Boney-McCoy, & Sugarman, 1996; Straus, Hamby, & Warren, 2003), and (f) residency in the greater-urban area. Exclusion criteria were (a) inpatient psychiatric hospitalization within the last year, and (b) current residence in a shelter/group home (determined a priori because structured living environments affect women's ability to have contact with their partners, their experience of IPV, and their use of substances). 1,120 women were screened for inclusion in the study, 198 of whom (17.7%) qualified to participate. Women who did not qualify were not significantly different than those who qualified on age and living arrangements, but were on race, highest grade completed, and working status. Women who did not qualify were significantly more likely to be white (21.9% compared to 9.1% among study participants), had completed on average more years of education (12.2 years compared to 11.8), and were more likely to be working (32.2% compared to 23.7%).

Greater detail about study procedures can be found in Sullivan et al. (2011). All participants completed: (a) a baseline interview; (b) 90 days of daily data collection, and (c) a follow-up interview on or after day 91 of the study. The baseline interview was administered face-to-face by a trained master- or doctoral-level female research associate in a private office to protect participants' safety and confidentiality. After completion of the follow-up interview, participants were debriefed. Throughout the study, they were provided with a list of community resources for employment, food, and benefits assistance, mental health and substance use treatment, and domestic violence services. Assistance accessing resources was provided upon request.

A toll-free number (i.e., 1-800-number) was dedicated to the study. Participants were provided with a laminated business card with the study telephone number and instructions for using the telephone data collection system. On this card was a study-assigned identification number which allowed participants to access study questions via the telephone data collection system; the identification number also allowed the study team to monitor participant's data. To maintain confidentiality and minimize risk to participant safety, (a) the laminated card noted the "[Institutions] Breast Cancer Study" as a header and (b) a © copyright symbol preceded identification numbers to deter others from comprehending the content and purpose of the laminated card. The survey was the PI's recorded voice providing instructions and asking close-ended questions. Participants were required to use the telephone's keypad to enter their responses. Callers were only able to report IPV incidents that occurred during the prior day to substantially minimize retrospection (i.e., ensure that IPV reports were not made long after they occurred). The potential existed that participants may not have reported IPV on a given day to more quickly complete the call. As a deterrent, participants were required to answer approximately the same number of questions each time, regardless of IPV or other activity (Searles, Helzer, & Walter, 2000). Calls were not monitored by a live person. However, women were able to connect directly to a domestic violence hotline while completing a study call by pressing numbers on the phone's key pad. Daily telephone data were uploaded and monitored every two to three days. Three consecutive days of missed calls resulted in a follow-up phone call from the research assistant to the participant to assess her safety and barriers to participation.

During the baseline interview, the research associate provided a 45-minute training session to each participant about how to complete the daily phone survey. Participants were instructed on how to call into the telephone system and respond to close-ended questions using numbers on their telephone's key pad. Training included didactic instruction and multiple guided practice exercises such that (1) the research associate called into the phone system and completed the survey using the participants experiences (e.g., IPV). that she had reported earlier in the interview while the participant observed and then, (2) the participant called into the phone system and completed the survey using experiences of IPV she had

reported earlier in the interview while the research associate provided guidance as necessary. All women reported that they were adequately prepared to participate in the study daily.

Participants were remunerated in cash for their participation and were eligible for payments immediately after each in-person interview and, for daily participation, every 30 days (although, if a participant requested payment before the end of the 30-day period, payment was made). All participants were remunerated $45 for the baseline and follow up interviews and $2 per phone call; Total possible remuneration was $270.

Measures

Given the focus of this special issue, this study examined only the co-occurrence of physical, sexual, and psychological IPV victimization; items were selected to assess a broad range of IPV experiences. Daily occurrence of physical IPV was assessed with one item that asked the total number of times “things got physical” on a given day, which was operationalized by multiple minor and severe assault behaviors according to the CTS – 2 (Straus et al., 2003). More specifically, if the participant responded that things got physical one or more times, the next survey question asked about the number of times she experienced any of five behaviors qualifying as minor physical IPV and the following question asked about the frequency of seven behaviors qualifying as severe physical IPV. Given that this study is broadly focused on overlap, it was only necessary to include the “times things got physical” item in the analyses. Sexual IPV was assessed by one item asking the total number of times her “partner did something sexual with me when I didn’t want to.” Psychological IPV was assessed by the following four items including items that were adapted from the Psychological Maltreatment of Women Inventory: (1) “total number of times I had an argument (in person, by phone, text, IM)”; (2) “number of times partner swore at me, put me down, called me names”; (3) “partner treated me like I was stupid or crazy”; and (4) “partner tried to keep me from going out or seeing my family”. These four items were collapsed to describe the occurrence of psychological IPV. Each of the three IPV variables was re-coded dichotomously to indicate whether a particular type of IPV had occurred on a given day.

Data analysis

Data on the occurrence and co-occurrence of IPV types were obtained from daily reports on incidents of IPV. Data analysis focused on the first 90 days of study participation for all women (some women participated slightly longer than 90 days because their follow-up interview did not occur on day 91 of the study because, for example, women were unavailable or day 91 fell on a weekend). Compliance rates, which reflect the proportion of days women completed the daily survey out of 90 days, were calculated for all 49 participants. We created person-level values for each IPV category by calculating the proportion of days each IPV type occurred for each participant. Next, we calculated descriptive statistics and correlations for the IPV variables at the person-level of analysis. Finally, we assessed the degree of co-occurrence among the IPV types at the daily level of analysis. Due to the repeated measures nature of the daily data, we used hierarchical generalized linear modeling (HGLM; Raudenbush & Bryk, 2002) for significance testing; specifically, given the binary nature of the variables at the day-level, we specified multilevel logistic regression models. We report unit parameters from the unit-specific models with robust standard errors. All 49 participants were retained for analysis regardless of the number of daily reports (however, for a day to be retained for analyses it needed to have complete data for the IPV variables and partner exposure). Inclusion of participants, regardless of the number of daily reports, is consistent with recent recommendations for maximizing the accuracy of parameter estimates derived from maximum likelihood-based models (see Singer & Willett, 2003, pp. 146-148).

To summarize, correlations among IPV proportion variables will inform us of the person-level association, namely, the degree to which individuals who experience one type of IPV frequently also report other types of IPV. It should be noted that strong positive person-level associations do not necessarily imply that various IPV types co-occur at the day level of analysis. Day-level associations will inform us of whether additional types of IPV are more or less likely to occur on days when one type of IPV occurs.

RESULTS

Overall, there were 2,811 daily reports nested within 49 women. Listwise deletion of person-days based on the IPV variables and women's exposure to their partners resulted in a final person-day *N* of 2,778 (i.e., only about 1.2% of the daily reports had missing data for the core study variables). Forty-five percent of women (n = 22) received follow-up calls from the research assistant after three successive days of missed calls to assess their safety and barriers to participation (see Sullivan et al. (2011) which cites difficulty remembering to call in as a primary reason calls were missed). The mean number of complete daily reports per person was 56.7 (*SD* = 27.7; minimum = 1, maximum = 90); the median was 60 and the interquartile range (IQR) was 36 (25^{th} percentile = 44; 75^{th} percentile = 80).

Table 1 shows the descriptive statistics and correlations for the proportion of days on which physical, sexual, and psychological IPV occurred, the proportion of days with exposure to partner (0 = not exposed to partner, 1 = exposed) and compliance (i.e., the proportion of the 90 days with completed daily reports); These values for the IPV variables and exposure to partner are un-weighted values given that individuals' proportions were based on different numbers of daily reports; the weighted values were similar and are as follows: physical = .09, sexual = .04, and psychological .37. As shown, psychological IPV occurred most often and sexual IPV occurred least often. The proportion of days with physical IPV was significantly related to the proportion of days with sexual IPV and the proportion of days with psychological IPV; both of these associations were strong. In contrast, psychological and sexual IPV were only moderately related at the person-level and this association was only marginally significant ($p = .08$). Reporting compliance was unrelated to physical and sexual IPV, but negatively related to psychological IPV. Specifically, individuals who had a greater proportion of days with psychological IPV called in on fewer days overall. The proportion of days exposed to partner was unrelated to IPV proportions.

Next, we examined the overall frequencies for each IPV type. Across all reporting days, psychological IPV occurred most often (on a total of 1,028 days; 37.0%), followed by physical IPV (on 249 days; 9.0%) and sexual IPV (on 115 days; 4.1%). Table 2 shows the frequencies and proportions for the occurrence of each IPV in isolation and the co-occurrence of multiple IPV types. On more than half the days, no IPV occurred. On 74.0% of days when IPV was reported, it was one type rather than multiple. As expected, psychological IPV was the most common type to occur in isolation; physical and sexual IPV generally occurred on days when psychological IPV occurred. Of interest, physical and sexual IPV never occurred together without psychological IPV also occurring.

We also examined day-level contingencies among the three IPV types, i.e., the likelihood that one type of IPV co-occurred with one of the other IPV types. We examined three models: psychological IPV predicting sexual IPV, psychological IPV predicting physical IPV, and sexual IPV predicting physical IPV. Initial estimates indicated that slope variance components were not significant (i.e., there were not significant differences in slope values across participants), thus all were fixed to zero for the sake of parsimony. The results of the HGLM models are shown in Table 3. All of the day-level associations were significant. However, the association between psychological and physical IPV was considerably

stronger than the other two. Specifically, the odds of reporting physical IPV were 64 times greater on days when psychological IPV occurred compared to days when psychological IPV did not occur. In contrast, the odds of reporting physical IPV were only 3.4 times greater on days when sexual IPV occurred compared to days when sexual IPV did not occur. It should be noted that at the person-level of analysis (see Table 1), physical and sexual IPV demonstrated one of the strongest associations.

Finally, we re-estimated these models removing days when women were not exposed to their partners; this reduced the person-day *N* to 2,028 and the person *N* to 48. The results from these models are also shown in Table 3. In general, the findings were similar with the association between physical and psychological IPV being considerably stronger than the other associations.

DISCUSSION

To our knowledge, this is the first known investigation of the daily occurrence and co-occurrence of IPV types among substance-using community women currently experiencing IPV. Results of this study reveal new information about physical, sexual, and psychological IPV experiences and demonstrate the utility of a micro-longitudinal design among this high risk population. The most frequently occurring IPV type was psychological only followed by the co-occurrence of psychological and physical–though the difference in prevalence between the two is striking (i.e., 27% vs. 6% of overall days, respectively). On a related note, it is equally salient that the odds of experiencing physical IPV were 64 times greater on days when psychological IPV occurred. Co-occurring physical and sexual IPV was the least frequently occurring type and never co-occurred in the absence of psychological IPV, followed closely by physical IPV only, which occurred on 8 days out of 2,778 (i.e., < 1%). Finally, it is noteworthy that days on which no IPV occurred were most common.

These findings, coupled with emerging literature on the relative negative contributions of psychological IPV to mental, physical, and reproductive health (Arias & Pape, 1999; Coker et al., 2002; Kimerling et al., 2007; Sullivan et al., 2009), underscore the importance of attending to psychological IPV in practice and research. At the least, health screeners that assess for physical IPV should also assess for psychological IPV, and treatment programs should integrate a focus on psychological IPV if one does not already exist. In future studies of high risk women, it would be prudent to include measures of psychological IPV in the assessment battery. The finding that, on most days, no IPV occurred may help to explain the ambivalence some women experience about ending their intimate relationships. Perhaps, as anecdotal evidence suggests, the “breaks” in between incidents of IPV contribute to minimizing problems in the relationship and instilling hope that partners will change their abusive behavior. Moreover, future research should more closely examine those days where no IPV occurs to identify factors that may contribute to preventing IPV altogether.

This study makes evident the utility of a micro-longitudinal design, namely the ability to capture women’s IPV experiences daily and as they unfold in their natural environment to investigate relationships without aggregating data over long periods. Notably, associations at the day level were somewhat different from the person level (i.e., between-person correlations). Analysis of day-level data indicated that psychological and physical IPV were associated much more closely than were psychological and sexual IPV or physical and sexual IPV. Examination of these associations at the person-level only, provided a different picture. Here, the association between physical and sexual IPV was comparable in size to the association between psychological and physical IPV. Stated in other words, individuals with higher proportions of physical IPV days also had higher proportions of sexual IPV days; this however, did not translate directly to day-level analysis, i.e., the likelihood of one

type of IPV co-occurring with another type of IPV. Our findings underscore previous cautions regarding the importance of distinguishing person-level and day-level findings (Robinson, 1950; Tennen et al., 2003). Accurate information about experiences is critical to allocating valuable resources to needed services (e.g., those that target psychological IPV via empowerment and skill building; see Harris, 1998), informing changes in public policy regarding victims and offenders, shifting norms regarding IPV so that all types are universally unacceptable, and ultimately, reducing IPV altogether.

We speculate that the patterns of co-occurrence found in this study reflect the heterogeneity of experiences among community-recruited women who experience IPV. We suspect that for some women, their experiences of physical IPV are the result of arguments (which often include psychological IPV) escalating to physical IPV – which is one reason findings show that physical IPV rarely occurs in isolation from psychological IPV. In regard to reasons for which physical and sexual IPV never co-occurred in the absence of psychological IPV, though there are no data to support this in the context of partner violence, we speculate that male partners rarely sexually assault women without simultaneously psychologically and/or physically abusing them. In other words, we believe that women's male partners do not sexually assault them without saying a (derogatory) word or without using some sort of physical force like pushing, grabbing, etc.

The present study should be considered in the context of the following limitations. The sample was comprised of women who used some amount of alcohol or drugs in the 30 days prior to study entry. Therefore, findings cannot be generalized to women who have not had at least one drink or used one illicit drug in the past month. Further, women who participated likely do not represent the most extreme end of the IPV spectrum given that study participation required women to have enough freedom to come to the office for interviews and use the phone daily to record experiences. Nonetheless, as data indicate, this study represents women who experience a range of IPV victimization [see author citation]. Future studies with larger person-day sample sizes are needed to replicate the strong associations found. For example, the odds ratio for the day-level association between physical and psychological IPV might be somewhat inflated due to the very low base-rate (and thus low observed variance) of the occurrence of physical IPV on days with no psychological IPV. An additional limitation is that analyses did not account for women's use of aggression and consequently, we do not know how women's use of aggression may be related to the occurrence and co-occurrence of their partners' aggression. Last, this study does not describe the temporal relationship of types of IPV, which would also be useful to inform practice and policy.

In conclusion, if replicated, findings of this unique study of women currently experiencing IPV have potentially important implications for practice and future research. This is the first study to raise awareness about women's lived experiences in regard to the occurrence and co-occurrence of IPV types. Findings can assist practitioners and inform public awareness campaigns to promote a better understanding of the range of experiences of abused women – namely that IPV does not occur on most days, psychological IPV alone is common and frequent, and physical IPV most often occurs on days when psychological IPV is experienced. This information is in contrast to most presentations of IPV in the media that typically depict severely physically abused women and focus less often on the occurrence and harmful effects of psychological IPV. Such presentations do not accurately represent all women who experience IPV and may do a disservice to the range of women who could benefit from or are in need of assistance from health service providers or criminal justice system practitioners. For example, some service providers might have difficulty identifying psychological IPV as worthy of attention. Yet our findings show that it is rather common and existing research has shown psychological IPV is a good indicator of future IPV risks

(O'Leary, 1999). Future research should consider micro-longitudinal designs to examine IPV experiences and related phenomena given that such methods may more accurately capture women's lived experiences. Further, future studies should examine if there are differential relationships by IPV type regarding antecedents, correlates, and consequences – cross-sectional studies have begun to explore these relationships, but results of the present study strongly suggest that micro-longitudinal designs are needed and may prove critical to identifying proximal relationships to target interventions.

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REFERENCES

Arias I, Pape KT. Psychological abuse: Implications for adjustment and commitment to leave violent partners. Violence & Victims. 1999; 14:55–67. [PubMed: 10397626]

Baldry AC. "Stick and stones hurt my bones but his glance and words hurt more": The impact of physiological abuse and physical violence by current and former partners on battered women in Italy. International Journal of Forensic Mental Health. 2003; 2:47–57.

Basile KC, Hall JE. Intimate Partner Violence Perpetration by Court-Ordered Men: Distinctions and Intersections Among Physical Violence, Sexual Violence, Psychological Abuse, and Stalking. Journal of Interpersonal Violence. 2011; 26:230–253. doi: 10.1177/0886260510362896. [PubMed: 20410373]

Basile, KC.; Hertz, M.; Back, S. Intimate Partner Violence and Sexual Violence Victimization Assessment Instruments for Use in Healthcare Settings: Version 1. Atlanta Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2007.

Becker KD, Stuewig J, McCloskey LA. Traumatic Stress Symptoms of Women Exposed to Different Forms of Childhood Victimization and Intimate Partner Violence. Journal of Interpersonal Violence. 2010; 25:1699–1715. doi: 10.1177/0886260509354578. [PubMed: 20040716]

Bennice JA, Resick PA, Mechanic M, Astin M. The relative effects of intimate partner physical and sexual violence on posttraumatic stress disorder symptomatology. Violence & Victims. 2003; 18:87–94. [PubMed: 12733621]

Bonomi AE, Anderson ML, Reid RJ, Rivara FP, Carrell D, Thompson RS. Medical and Psychosocial Diagnoses in Women With a History of Intimate Partner Violence. Archives of Internal Medicine. 2009; 169:1692–1697. doi: 10.1001/archinternmed.2009.292. [PubMed: 19822826]

Bonomi AE, Anderson ML, Rivara FP, Thompson RS. Health Outcomes in Women with Physical and Sexual Intimate Partner Violence Exposure. Journal of Women's Health. 2007; 16:987–997. doi: doi:10.1089/jwh.2006.0239.

Breiding MJ, Black MC, Ryan GW. Chronic Disease and Health Risk Behaviors Associated with Intimate Partner Violence--18 U.S. States/Territories. Annals of Epidemiology. 2008; 2005; 18:538–544. [PubMed: 18495490]

Campbell JC. Health consequences of intimate partner violence. The Lancet. 2002; 359:1331–1336.

Campbell JC, Jones AS, Dienemann J, Kub J, Schollenberger J, O'Campo P, … Wynne C. Intimate partner violence and physical health consequences. Archives of Internal Medicine. 2002; 162:1157–1163. [PubMed: 12020187]

Campbell JC, Lewandowski LA. Mental and Physical Health Effects of Intimate Partner Violence on Women and Children. Psychiatric Clinics of North America. 1997; 20:353–374. [PubMed: 9196919]

Coker AL, Davis KE, Arias I, Desai S, Sanderson M, Brandt HM, Smith PH. Physical and mental health effects of intimate partner violence for men and women. American Journal of Preventive Medicine. 2002; 23:260–268. [PubMed: 12406480]

Coker AL, Smith PH, McKeown RE, King MJ. Frequency and correlates of intimate partner violence by type: physical, sexual, and psychological battering.[see comment]. American Journal of Public Health. 2000; 90:553–559. [PubMed: 10754969]

Csikszentmihalyi M, Larson R. Validity and reliability of the experience-sampling method. Journal of Nervous & Mental Disease. 1987; 175:526–536. [PubMed: 3655778]

Duterte EE, Bonomi AE, Kernic MA, Schiff MA, Thompson RS, Rivara FP. Correlates of Medical and Legal Help Seeking among Women Reporting Intimate Partner Violence. Journal of Women's Health. 2008; 17:85–95.

Dutton M, Kaltman S, Goodman L, Weinfurt K, Vankos N. Patterns of Intimate Partner Violence: Correlates and Outcomes. Violence and Victims. 2005; 20:483–497. doi: doi:10.1089/jwh.2007.0460. [PubMed: 16248486]

Edwards V, Black M, Dhingra S, McKnight-Eily L, Perry G. Physical and sexual intimate partner violence and reported serious psychological distress in the 2007 BRFSS. International Journal of Public Health. 2009; 54:37–42. doi: 10.1007/s00038-009-0005-2. [PubMed: 19363588]

Ellsberg M, Jansen HAFM, Heise L, Watts CH, Garcia-Moreno C. Intimate partner violence and women's physical and mental health in the WHO multi-country study on women's health and domestic violence: an observational study. The Lancet. 2008; 371:1165–1172.

Follingstad DR. The Impact of Psychological Aggression on Women's Mental Health and Behavior: The Status of the Field. Trauma Violence Abuse. 2009; 10:271–289. doi: 10.1177/1524838009334453. [PubMed: 19460760]

Gruenewald PJ, Russell M, Light J, Lipton R, Searles J, Johnson F, … Nochajski TH. One drink to a lifetime of drinking: Temporal structures of drinking patterns. Alcoholism: Clinical & Experimental Research. 2002; 26:916–925.

Harris, M. Trauma recovery and empowerment: A clinician's guide for working with women in groups. 1998. 1998.

Hedtke KA, Ruggiero KJ, Fitzgerald MM, Zinzow HM, Saunders BE, Resnick HS, Kilpatrick DG. A Longitudinal Investigation of Interpersonal Violence in Relation to Mental Health and Substance Use. Journal of Consulting & Clinical Psychology. 2008; 76:633–647. [PubMed: 18665691]

Hektner, JM.; Schmidt, J,A.; Csikszentmihalyi, M. Experience sampling method: Measuring the quality of everyday life. Sage Publications, Inc; Thousand Oaks: 2007.

Jun H-J, Rich-Edwards JW, Boynton-Jarrett R, Wright RJ. Intimate Partner Violence and Cigarette Smoking: Association Between Smoking Risk and Psychological Abuse With and Without Co-Occurrence of Physical and Sexual Abuse. Am J Public Health. 2008; 98:527–535. doi: 10.2105/ajph.2003.037663. [PubMed: 17600272]

Kimerling R, Alvarez J, Pavao J, Kaminski A, Baumrind N. Epidemiology and consequences of women's revictimization. Womens Health Issues. 2007; 17:101–106. [PubMed: 17403467]

Logan TK, Cole J, Shannon L. A Mixed-Methods Examination of Sexual Coercion and Degradation Among Women in Violent Relationships Who Do and Do Not Report Forced Sex. Violence and Victims. 2007; 22:71–94. [PubMed: 17390564]

Mechanic MB, Weaver TL, Resick PA. Mental Health Consequences of Intimate Partner Abuse: A Multidimensional Assessment of Four Different Forms of Abuse. Violence Against Women. 2008; 14:634–654. doi: 10.1177/1077801208319283. [PubMed: 18535306]

O'Leary K. Psychological abuse: A variable deserving critical attention in domestic violence. Violence & Victims. 1999; 14:3–23. [PubMed: 10397623]

Pico-Alfonso MA. Psychological intimate partner violence: the major predictor of posttraumatic stress disorder in abused women. Neuroscience & Biobehavioral Reviews. 2005; 29:181–193. [PubMed: 15652265]

Pico-Alfonso MA, Garcia-Linares MI, Celda-Navarro N, Blasco-Ros C. n. EcheburÃ°a E, Martinez M. The Impact of Physical, Psychological, and Sexual Intimate Male Partner Violence on Women's Mental Health: Depressive Symptoms, Posttraumatic Stress Disorder, State Anxiety, and Suicide. Journal of Women's Health. 2006; 15:599–611. doi: doi:10.1089/jwh.2006.15.599.

Plichta SB. Intimate Partner Violence and Physical Health Consequences: Policy and Practice Implications. Journal of Interpersonal Violence. 2004; 19:1296–1323. [PubMed: 15534333]

Resnick HS, Acierno R, Kilpatrick DG. Health impact of interpersonal violence. 2: Medical and mental health outcomes. Behavioral Medicine. 1997; 23:65–78. [PubMed: 9309346]

Robinson WS. Ecological correlations and the behavior of individuals. American Sociological Review. 1950; 15:351–357.

Singer, JD.; Willett, JB. Applied longitudinal data analysis: Modeling change and event occurence. Oxford University Press; New York: 2003.

Smith PH, White JW, Holland LJ. A Longitudinal Perspective on Dating Violence Among Adolescent and College-Age Women. Am J Public Health. 2003; 93:1104–1109. doi: 10.2105/ajph.93.7.1104. [PubMed: 12835193]

Stone, AA.; Shiffman, S.; Alienza, AA.; Nebeling, L., editors. The science of real-time data capture: Self-reports in health research. Oxford University Press; New York: 2007.

Stone AA, Shiffman S, Schwartz JE, Broderick JE, Hufford MR. Patient compliance with paper and electronic diaries. Controlled Clinical Trials. 2003; 24:182–199. [PubMed: 12689739]

Straight ES, Harper FWK, Arias I. The impact of partner psychological abuse on health behaviors and health status in college women. Journal of Interpersonal Violence. 2003; 18:1035–1054. [PubMed: 19771708]

Straus MA, Hamby SL, Boney-McCoy S, Sugarman DB. The revised Conflict Tactics Scales (CTS2): Development and preliminary psychometric data. Journal of Family Issues. 1996; 17:283–316.

Straus, MA.; Hamby, SL.; Warren, WL. The Conflict Tactics Scales Handbook. Western Psychological Services; Los Angeles: 2003.

Sullivan TP, Cavanaugh CE, Buckner JD, Edmondson D. Testing posttraumatic stress as a mediator of physical, sexual, and psychological intimate partner violence and substance problems among women. Journal of Traumatic Stress. 2009; 22:575–584. [PubMed: 19960546]

Sullivan TP, Khondkaryan E, Dos Santos NP, Peters EN. Applying Experience Sampling Methods to Partner Violence Research: Safety and Feasibility in a 90-Day Study of Community Women. Violence Against Women. 2011; 17:251–266. doi: 10.1177/1077801210397756. [PubMed: 21307033]

Sullivan TP, Schroeder JA, Dudley DN, Dixon JM. Do Differing Types of Victimization and Coping Strategies Influence the Type of Social Reactions Experienced by Current Victims of Intimate Partner Violence? Violence Against Women. 2010; 16:638–657. doi: 10.1177/1077801210370027. [PubMed: 20445076]

Tennen, H.; Affleck, G. Daily processes in coping with chronic pain: Methods and analytic strategies. In: Zeidner, Moshe; Endler, Norman S., editors. Handbook of coping: Theory, research, applications. 1996. 1996. p. 151-177.p. 728ppxxi

Tennen, H.; Affleck, G.; Armeli, S. Daily processes in health and illness. In: Suls, J.; Wallston, KA., editors. Social psychological foundations of health and illness Blackwell series in health psychology and behavioral medicine. Blackwell Publishers; Malden, MA: 2003. p. 495-529.

Tennen H, Affleck G, Coyne JC, Larsen RJ, DeLongis A. Paper and plastic in daily diary research: Comment on Green, Rafaeli, Bolger, Shrout, and Reis. Psychological Methods. 2006; 2006; 11:112–118. doi: 10.1037/1082-989x.11.1.112. [PubMed: 16594771]

Thompson RS, Bonomi AE, Anderson M, Reid RJ, Dimer JA, Carrell D, Rivara FP. Intimate partner violence: prevalence, types, and chronicity in adult women. American Journal of Preventive Medicine. 2006; 30:447–457. [PubMed: 16704937]

Table 1

Descriptive statistics for person-level variables

				Correlations			
		M	***SD***	***1***	***2***	***3***	***4***
1	Physical IPV	0.12	0.25				
2	Sexual IPV	0.04	0.15	.49**			
3	Psychological IPV	0.42	0.34	.56**	.25		
4	Partner exposure	0.69	0.31	.20	.14	.12	
5	Compliance	0.63	0.31	−.23	.04	−.34*	.24

Note: IPV – Intimate Partner Violence

* p < .05

** p < .01

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Table 2
Day-level patterns of co-occurrence of IPV types

Category	*Frequency*	%
1. No IPV	1724	62.1
2. Physical IPV only	8	0.3
3. Psychological IPV only	754	27.1
4. Sexual IPV only	18	0.6
5. Physical and Psychological	177	6.3
6. Physical and Sexual	0	0.0
7. Psychological and Sexual	33	1.2
8. Physical, Psychological and Sexual	64	2.3

Note. IPV – intimate partner violence.

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Table 3

Multilevel logistic regression results for day-level associations

Independent variable	***Dependent variable***	***B***	***SE***	***t***	***p***	***OR***	***95% CI***
Total Sample							
Psychological IPV	Physical IPV	4.16	0.51	8.14	<.001	64.38	23.62 - 175.54
Psychological IPV	Sexual IPV	1.81	0.67	2.69	.008	6.13	1.64 - 23.01
Sexual IPV	Physical IPV	1.23	0.33	3.69	<.001	3.42	1.78 - 6.56
Reduced Sample							
Psychological IPV	Physical IPV	4.05	0.65	6.26	<.001	57.22	16.12 - 203.09
Psychological IPV	Sexual IPV	1.44	0.58	2.48	.013	4.20	1.35 - 13.06
Sexual IPV	Physical IPV	0.86	0.29	2.96	.004	2.36	1.34 - 4.17

Note. OR = odds ratio; CI = confidence interval; IPV = intimate partner violence