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Dyadic Analysis of Emotional Intimate Partner Violence: An Estimation of Dyadic Patterns and Influencing Individual, Family, and Couple Factors

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ABSTRACT

Background: The co-occurrence of intimate partner violence (IPV) has been usually determined by co-occurring reports of perpetration and victimization, but still not considering the interdependence of both members' reports. The current research aimed to analyze the dyadic patterns of IPV perpetration and victimization, considering the influence of sexism toward women, family functioning, and relationship duration. *Method:* The sample involved 242 couples heterosexual couples. The Actor-Partner Interdependence Model was calculated to analyze the violent dynamics in the couple. For males, a couple-oriented pattern was identified, but for females the pattern was between couple-oriented and actor-only pattern. *Results:* These patterns remained stable when personal, family, and relational variables were included in the model, which present different effects on perpetration and victimization: males' hostile sexism predicted higher levels of male IPV perpetration and victimization as well as higher levels of male and female victimization via male perpetration. Regarding family functioning, higher family good functioning predicted lower IPV perpetration in males and lower victimization in females. Finally, relationship length predicted higher levels of IPV perpetration of both couple members and higher victimization via perpetration. *Conclusions:* These results are discussed in light of the interdependence of couple members' IPV perpetration and victimization.

Análisis diádico de la violencia emocional en la pareja: una estimación de los patrones diádicos y la influencia de factores individuales, familiares y de la pareja

Palabras clave:
Análisis diádico
Violencia en la pareja
Sexismo ambivalente
Funcionamiento familiar
Duración de la relación

RESUMEN

Antecedentes: La coocurrencia de la violencia en la pareja (IPV) suele establecerse con el informe de ambos miembros de la pareja, pero rara vez se tiene en cuenta la interdependencia entre sus respuestas. El objetivo del trabajo ha sido analizar los patrones diádicos de la IPV teniendo en cuenta el sexismo hacia las mujeres, la funcionalidad familiar y la duración de la relación. *Método:* La muestra estaba compuesta por 242 parejas heterosexuales, utilizándose el Actor-Partner Interdependence Model para analizar los patrones diádicos. En el caso de los hombres se identificó el patrón orientado a la díada, mientras que el patrón de las mujeres parecía encontrarse entre el orientado a la díada y al actor. *Resultados:* Estos patrones se mantuvieron tras haber incluido el sexismo, el funcionamiento familiar y la duración de la relación: el sexismo hostil de los hombres predecía mayores niveles de perpetración en ellos y de victimización en ambos a través de la perpetración de los hombres. El buen funcionamiento familiar predecía una menor perpetración en los hombres y victimización en las mujeres. Finalmente la duración de la relación predijo mayores niveles de perpetración y victimización a través de la perpetración en ambos miembros de la pareja. *Conclusiones:* Se discuten los resultados a partir de la interdependencia de la IPV de ambos miembros de la pareja.

The interest in the study of intimate partner violence (IPV) has been mainly focused on male-to-female IPV with less scientific attention paid to other forms of IPV such as mutual or bidirectional IPV (Straus, 2012). Hardesty and Ogolsky (2020) in their review of studies identified two general approximations toward the study of mutual IPV using self-reported data: (1) studies using single informant self-reported data of perpetration and victimization and (2) studies using data of perpetration and/or victimization from both members of the couple. The single informant approach has been the predominant way to evaluate male-to-female violence asking only aggressors (males) about perpetration/victimization or victims (females) about victimization/perpetration. These studies usually

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report similar rates of IPV perpetration and victimization among men and women, with some differences regarding the type and severity of IPV (i.e., sexual) (Hammock et al., 2017; Hardesty & Ogolsky 2020; Kuijpers et al., 2021).

Although these studies have allowed a more exhaustive knowledge of the processes inherent to IPV, they have the disadvantage of reducing the study of a relational process to the point of view of only one of the members. To address this limitation, there has been a growing interest in incorporating the views of both partners. Studies on both partners' reports have analyzed the concordance between respondents' reports (e.g., males' perpetration report and women's victimization report or both members' perpetration and victimization) and have commonly reported high rates of bidirectional IPV (Archer, 2000; Babcock et al., 2019; Hardesty & Ogolsky, 2020; Herrero et al., 2020; Langhinrichsen-Rohling et al., 2012; Straus, 2012). Collecting reports from both partners undoubtedly offers additional information in order to get more accurate explanations of IPV. Nevertheless, the limitation of the potential disagreement has been pointed out as a worrying issue in the study of dyads' responses (Marshall et al., 2021). For example, high levels of concordance have been attributed to a large number of non-violent couples, inflating the general concordance levels and recent research has shown that eliminating these non-violent couples' concordance levels are low to moderate (Marshall et al., 2021; Riesgo et al., 2019). Unfortunately, the statistical analyses in these studies assume independence of observations (ANOVAs, linear regression, etc.), something that is difficult to maintain with the couple data (Herrero et al., 2020): As far as dyad members' behaviors are interdependent, the occurrence of IPV perpetration and victimization must be addressed by interdependence models.

The Current Research: Dyadic Analysis of Verbal-emotional IPV

The co-occurrence of IPV has been usually determined by co-occurring reports of perpetration and victimization, but still not considering the interdependence of both members' reports. For the two-way IPV study it is necessary to take into account that both perpetration and victimization of members are likely to be dependent on each other (e.g., one member perpetrates IPV and the other member retaliates), so it is necessary to use statistical procedures that allow for analysis of scale scores that may probably be dependent (interdependence).

The current research aimed to analyze the dyadic patterns of verbal-emotional IPV perpetration and victimization among heterosexual couples through the Actor-Partner Interdependence Model (APIM; Cook & Kenny, 2005; Kenny, 1996). APIM allows the identification of different dyadic patterns according to two types of effects: actor and partner. Actor effect is the effect of one own self-reported IPV perpetration (e. g., perpetration reported by the male) on own self-reported IPV victimization (e. g., victimization reported by the male). The partner effect is the effect of the partner self-reported IPV perpetration (e. g., perpetration reported by the male) on the other partner self-reported IPV victimization (e. g., victimization reported by the female).

Four different dyadic patterns have been proposed that account for the interdependence of behaviors within the couple (Cook & Kenny, 2005; Kenny, 1996; Kenny & Ledermann, 2010): actor-only pattern, partner-only pattern, couple pattern, and contrast pattern. The actor-only pattern indicates that dyad members' IPV victimization is fully explained by their own IPV perpetration, but not by the partner's IPV perpetration (partner effect is zero) (e. g., the male's self-reported victimization is only predicted by the male's-self-reported perpetration). On the contrary, the partner-only pattern means that the own IPV victimization is fully explained by the partner IPV perpetration (actor effect is zero) (e. g., the female's self-reported victimization is fully explained by the male's self-reported perpetration). The couple pattern indicates that IPV victimization of each member is explained by both his/her own IPV perpetration as well as his/her partner's IPV perpetration (both effects are non-zero and equal in magnitude) (e. g., the male's self-reported victimization is predicted by the male's self-reported perpetration and the female's self-reported perpetration). Finally, in the contrast effect pattern both members' IPV perpetration explains the IPV victimization (both effects are non-zero and equal in magnitude like in the couple-pattern) but actor and partner effects are of different signs.

The study of interdependence through APIM provides a further avenue for the study of IPV. APIM not only does allow the study of relational patterns of violence within the couple, but it also allows the analysis of the influence of third variables (personal, family, and relational variables) on these patterns. Research on the correlates of IPV is very extensive and there is now sufficient empirical evidence on the effect of personal, family, and relational factors on IPV.

As for the personal characteristics of the members of the couple, the relevance of sexist attitudes toward women have been thoroughly studied in male-to-female IPV, but to our knowledge they have not been considered in the study of dyadic patters combining males' and females' sexist attitudes. Some authors have pointed out that females' sexist attitudes toward women could act as protecting factor against IPV (Allen et al., 2009) although little is known about the effect of (dis)similarities on sexist attitudes toward women on IPV perpetration and victimization.

The influence of family of origin on IPV has also been the focus of scientific inquiry. Recent research has suggested that family of origin might influence male and female IPV perpetration and victimization differently, while the exposure to conflict and violence in the family of origin has been related with future IPV perpetration in males (Capaldi et al., 2012; Godbout et al., 2017; Kimber et al., 2018; Jennings et al., 2017; Juarros-Basterretxea et al., 2019), and with future females IPV victimization (Herrero et al., 2018; Ørke et al., 2018). These studies have been carried out with data from a single informant of the couple, so it is not possible to identify precisely what is their influence on the relational patterns of IPV.

At the relational level, the relationship length has been positively related with the increase of IPV pointing out the increase of (psychological, physical, sexual) IPV frequency and variety (Cooper et al., 2021; Kennedy et al., 2018; Swiatlo et al., 2020). Furthermore, recent literature has shown more bidirectional psychological IPV risk in more established dyads (marriage and cohabiting) (Hu et al., 2021).

The aim of the present research is the analysis of IPV patterns within the couple and how these patterns are influenced by personal, family, and relational conditioning factors of the couple.

Method

Participants

A total of 242 Mexican couples of young heterosexual male and female partners from the general population participated in the current study. Males' and females' mean age were 20.10 (SD = 3.17) and 19.05 (SD = 2.82) respectively, with males being slightly older than women, $t(482) = 3.304$, $p < .001$, Cohen's $d = .35$.

Variables

Verbal-Emotional Intimate Partner Violence Perpetration and Victimization

The verbal-emotional abuse factor of the Conflict in Adolescent Dating Relationships Inventory (CADRI) Spanish adaptation

(Fernández-Fuertes et al., 2006) was used to evaluate the levels of perpetration and victimization of verbal-emotional intimate partner violence. Participants responded to ten equivalent items relative to the perpetration (e.g., "I said things just to make my partner angry") and victimization (e.g., "My partner said things just to make me angry") with category responses from 0 (*never*) to 3 (*6 or more times*). An overall score of each dimension was used by adding up all the items of perpetration (α = .79) and victimization (α = .86).

Sexist Attitudes

The Ambivalent Sexism Inventory (ASI; Expósito et al., 1998) was used to evaluate hostile and benevolent sexism. This scale consists of 22 items, eleven items assessing hostile sexism (e.g., "Women are too easily offended") and eleven assessing benevolent sexism (e.g., "Women should be cherished and protected by men"). Item category responses ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). An overall score of each dimension was used by adding up all the items of hostile sexism (α = .72) and benevolent sexism (α = .79).

Family Functioning

The APGAR scale (Smilkstein, 1978) was used to evaluate the participant's perception of their family of origin functioning. This scale is composed of five items (adaptability, partnership, growth, affection, and resolve) rated on a 3-point Likert scale from 0 (*hardly never*) to 2 (*almost always*). An overall score was used by adding up all the items (α = .83). A couple-level measure of the length of the relationship was gaged in months from self-reported responses from participants. As no discrepancies were found, the length reported by the couple members was used.

Procedure

The snowball technique was applied to university students, users of civic centers, and other community associations and entities. Each potential participant was instructed to invite his or her partner to the study. The couples finally selected were informed of the study procedure and their informed consent was requested. In those cases where participants were adolescents, an informed consent signed by their parents was required. An identical battery of tests was applied to each partner separately in order to guarantee anonymity. An identification number of the couple was assigned to both members in order identify couples' responses.

Data Analysis

The Actor-Partner Interdependence Model (APIM; Cook & Kenny, 2005; Kenny, 1996) was calculated using structural equation modeling (SEM) to analyze the IPV patterns of the couple. First, the standard APIM was estimated; the standard APIM has 14 parameters (Kenny & Ledermann, 2010): one mean and variance for each of two independent variables, one intercept for each of two dependent variables, one variance of error for each of two errors, two actor effects (a_1 and a_2) and two partner effects (p_{12} and p_{21}), one covariance between independent variables (c_1), and one covariance between the error terms (c_2) (see Figure 1). Because saturated models have no degrees of freedom, fit indices cannot be calculated.

Heterosexual couples, as the participants used in the current research, are considered distinguishable (Kenny & Lederman, 2010), which implies that the potential difference of the dyadic patterns in males and females can be tested. Nevertheless, as suggested by Kenny and Lederman (2010), the distinguishability, which refers to the fact that the members of the couple are exchangeable or not, should be tested before considering if it empirically matters when analyzing different members of the couple. Following Kenny (2013a), we tested distinguishability of the members of the couple attending to: a) complete distinguishability, b) Y distinguishability, and c) effect distinguishability.

To test the complete distinguishability, the model required to set equal the two actor effects, the two partner effects, the two error variances, the two Y (victimization) intercepts, the two X (perpetration) variances, and the two X (perpetration) means. To test the Y distinguishability all previously referred parameters excepting X (perpetration) means and variances were set equal to estimate the Y indistinguishability. Finally, the effect indistinguishability was tested setting only actor and partner effects equal. Additionally, the partial-effect indistinguishability was tested fixing only males' and females' actor or partner effects equal. If there were significant differences, the dyad members' scores would have to be treated as distinguishable.

After the distinguishability of the dyads was established, the k parameters were calculated for dyadic pattern identification (see Figure 2) (Kenny, 2013b). The k parameter is defined as the ratio of the partner effect to the actor effect (Kenny & Ledermann, 2010, p. 360) and allows to identification of four dyadic patterns: the actor-only pattern (k = 0 because of partner effect is 0), partner-only pattern (k = 0 because of actor effect is 0), couple pattern (k = 1), and contrast pattern (k = -1). In this regard, the pattern was identified when the confidence interval (CI) for k contained the value of the pattern (e.g., when the CI contained the 1 the couple pattern was considered plausible). The equality of the patterns ($k_1 = k_2$) was also tested in order to determine if the dyadic patterns of males and females significantly differ using a single or pooled *k*.

Once the model that best fit the data was identified, it was re-estimated to include the influence of the individual characteristics of the members (sexist attitudes) family of origin characteristics (family functioning in the family of origin) and couple characteristics (length of the relationship).

The significance of the effects was tested using bias-corrected bootstrap CI (5,000 bootstraps). Bootstrap errors are preferable to the standard errors to test for the significance of the k parameter because this parameter is a ratio, which implies that its distribution would be skewed (Kenny & Ledermann, 2010). All APIM were estimated using M*plus* 7.3 (Muthén & Muthén, 1998-2017) software.

Results

The means and standard deviations of the measured variables are displayed in Table 1.

Table 1. Means and Standard Deviations of the Variables

	Males	Females
Variable	*M* (*SD*)	*M* (*SD*)
Verbal-emotional IPV perpetration	4.57 (3.78)	5.81 (4.47)
Verbal-emotional IPV victimization	5.27 (5.30)	4.58 (4.62)
Hostile sexist attitudes	31.06 (6.42)	28.82 (6.31)
Benevolent sexist attitudes	28.19 (6.49)	30.75 (7.10)
Family functioning	6.88 (2.85)	6.38 (2.67)
Relationship length	19.67 (20.11)	19.67 (20.11)

Test of Distinguishability

Complete indistinguishability, Y indistinguishability, and effect indistinguishability were performed in order to test if sex (male-female) makes a statistically significant difference (see Table 2). Complete, $\chi^2(6) = 45.07$, $p < .001$; Y, $\chi^2(4) = 21.46$, $p < .001$; and effect,

Table 2. Complete, Y, and Effect Tests of Distinguishability, and Actor and Partner Effects

Models	χ^2 (*df*)	a_1 b [95% CI]	a_2 b [95% CI]	p_{12} b [95% CI]	p_{21} b [95% CI]
Standard saturated APIM	-	.673 [.529, .828]	.614 [.510, 725]	.500 [.361, .652]	.317 [.186, .435]
Complete indistinguishability	53.71*** (6)	.597 [.522, .672]	597 [.522, .672]	.463 [.374, .556]	.463 [.374, .556]
Y indistinguishability	23.37*** (4)	.597 [.522, .672]	.597 [.522, .672]	.463 [.374, .556]	.463 [.374, .556]
Effect indistinguishability	11.70** (2)	.624 [.545, .703]	.624 [.545, .703]	.426 [.341, .512]	.426 [.341, .512]
Partial effect indistinguishability - $a_1 = a_2$; $p_{12} \neq p_{21}$	0.45 (1)	.637 [.555, .718]	.637 [.555, 718]	.519 [.405, .639]	.298 [.164, .403]
Partial effect indistinguishability - $a_1 \neq a_2$; $p_{12} = p_{21}$	4.50* (1)	.739 [.606, .880]	.559 [.471, 644]	.417 [.329, .504]	.417 [.329, .504]

Note. a_1 = actor effect male; a_2 = actor effect female; p_{12} = partner effect male (from female to male); p_{21} = partner effect female (from male to female).
*p <.05, **p < .01, ***p < .001.

$\chi^2(2) = 11.17$, $p < .01$, indistinguishability tests' results suggested that female and male partners' behaviors were distinguishable according to sex.

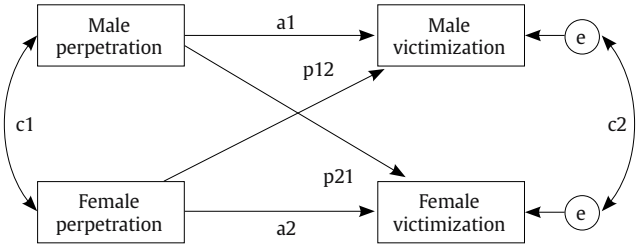

Figure 1. Standard or basic Actor-Partner Interdependence Model (APIM).

Additionally, partial effect indistinguishability was tested constraining actor effects to equality, but not partner effects ($a_1 = a_2$, $p_{12} \neq p_{21}$) in the first model and only the partner effects, but not actor effects ($a_1 \neq a_2$, $p_{12} = p_{21}$) in the second model. The model which constrained both male and female actor effects to be equal was not significantly worse than the standard model, $\chi^2(1) = 0.45$, $p = .499$. Nevertheless, the model which imposed the equality of the partner effects was significantly worse, $\chi^2(1) = 4.50$, $p < .05$.

According to these results, dyad members were distinguishable based on sex (male-female). However, it is important to note that this distinguishability was partial: partner effects were distinguishable, but actor effects were not. In other words, the actor effect was not significantly different for males and females.

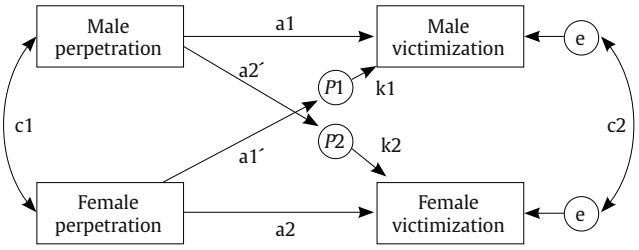

Figure 2. Actor-Partner Interdependence Model (APIM) with ks.

Dyadic Patterns Estimation

In order to determine the dyadic patterns, the k parameters were estimated. Because both partners are distinguishable, different k parameters for males and females should be estimated. However, because partial distinguishability was previously identified, the pooled k was also estimated to test the potential equality of males' and females' k parameters and thus the potential equality of the patterns. The model with the pooled k ($k_1 = k_2$) fitted significantly worse than the distinguishable patterns model ($k_1 \neq k_2$). Thus, the patterns of males and females were significantly different: the k

Table 3. Unstandardized Direct, Indirect and Total Effects and 95% Confidence Interval for Model with Relational, Individual, and Family Covariables

	Males' hostile sexism	Males' benevolent sexism	Females' hostile sexism	Females' benevolent sexism	Males' family functioning	Females' family functioning	Length of relationship
	b [95% CI]	b [95% CI]	b [95% CI]	b [95% CI]	b [95% CI]	b [95% CI]	b [95% CI]
Perpetration							
Male	**.123 [.046, .194]**	-.226 [-.735, .321]	.058 [-.017, .128]	.190 [-.307, .640]	**-.224 [-.396, -.066]**	.010 [-.179, .199]	**.045 [.025, .070]**
Female	.078 [-.019, .176]	.242 [-.366, .824]	.066 [-.028, .158]	-.211 [-.747, .346]	-.047 [-.232, .128]	-.147 [-.330, .054]	**.069 [.039, .104]**
Victimization							
Direct effects							
Male	**.165 [.083, .249]**	.135 [-.313, .596]	-.070 [-.148, .001]	-.202 [-.632, .208]	-.083 [-.256, .090]	-.009 [-.140, .124]	.016 [-.008, .045]
Female	.061 [-.007, .137]	-.058 [-.460, .383]	-.048 [-.114, .012]	.086 [-.312, .439]	-.108 [-.306, .056]	**-.246 [-.421, -.077]**	.001 [-.022, .025]
Indirect effects							
Male (total indirect)	**.111 [.033, .195]**	-.021 [-.502, .519]	.066 [-.009, .137]	.014 [-.483, .447]	**-.158 [-.309, -.013]**	-.064 [-.245, .115]	**.060 [.037, .090]**
Via male perpetration	**.074 [.028, .121]**	-.136 [-.435, .202]	.035 [-.010, .077]	.114 [-.192, .381]	**-.135 [-.239, -.042]**	.006 [-.110, .118]	**.027 [.015, .043]**
Via female perpetration	.037 [-.007, .094]	.116 [-.165, .425]	.031 [-.011, .077]	-.101 [-.379, .150]	-.023 [-.112, .061]	-.070 [-.173, .019]	**.033 [.018, .056]**
Female (total indirect)	**.082 [.008, .161]**	.080 [-.355, .540]	.056 [-.012, .122]	-.072 [-.488, .314]	-.093 [-.226, .033]	-.086 [-.231, .070]	**.056 [.025, .094]**
Via male perpetration	**.035 [.011, .072]**	-.065 [-.240, .082]	.017 [-.003, .043]	.055 [-.083, .205]	**-.065 [-.138, -.019]**	.003 [-.055, .064]	**.013 [.006, .025]**
Via female perpetration	.047 [-.012, .108]	.146 [-.218, .507]	.039 [-.016, .096]	-.127 [-.450, .206]	-.028 [-.146, .075]	-.088 [-.195, .033]	**.042 [.023, .064]**
Total effects							
Male	**.277 [.150, .406]**	.114 [-.506, .692]	-.004 [-.120, .101]	-.188 [-.827, .369]	**-.240 [-.492, -.042]**	-.074 [-.286, .148]	**.076 [.038, .123]**
Female	**.143 [.043, .253]**	.023 [-.515, .607]	.008 [-.089, .106]	.014 [-.524, .511]	-.201 [-.450, .017]	**-.332 [-.581, -.075]**	**.055 [.033, .081]**

Note. Significant b are in boldface.

for males (k_1) was equal to .815 (95% C.I. [.588, 1.076]) and the k for females (k_2) was equal to .467 (95% C. I. [.212, .713]). For males, the 95% CI of k includes 1, which suggests a couple-oriented pattern. Less clear are the results for females considering that k is between 0 and 1 and the 95% CI did not include 0 (actor-only pattern) nor 1 (couple-oriented pattern). Because of this, the partial-distinguishable APIM ($a_1 = a_2$; $p_{12} \neq p_{21}$) model with two *k*s was used for subsequent estimations.

APIM with Relational, Individual, and Family Covariables

This final model with partially-distinguishable members was re-estimated now including the characteristics of the individuals (sexism), the characteristics of the family of origin (family functioning), and the characteristics of the couple (length of relationship). Model fit was excellent ($\chi^2 = 0.03$, df = 1, p = .855) and results indicated that the partial distinguishability was still present: the couple-oriented pattern remained unchanged for males ($a_1 = 0.602$ [.528, .682], $k_1 = 0.794$ [.602, 1.034]), but the pattern was still not fully identifiable for females ($a_2 = 0.602$ [.528, .682], $k_2 = 0.478$ [.235, .710]).

In Table 3 the direct, indirect, and total effects of covariables of the model are displayed. As for sexist attitudes, only males' hostile sexism had some significant effects on perpetration and victimization. Specifically, males' hostile sexism had a direct positive and significant effect on males' perpetration (β = .123, 95% CI [.046, .194]) and victimization (β = .165, 95% CI [.083, .249]). Additionally, males' hostile sexism also had an indirect positive and significant effect on males' victimization (β = .074, 95% CI [.028, .121]) and females' victimization (β = .035, 95% CI [.011, .072]) via males' perpetration. Thus, male participants who endorsed more hostile attitudes toward women not only perpetrated more IPV to their female partners, which predicted in turn higher levels of female victimization. They also felt more victimized by their female partners.

Male's family of origin good-functioning had significant and negative direct effect on males' perpetration (β = -.224, 95% CI [-.396, -.066]), but also an indirect significant negative effect on males' victimization (β = -.135, 95% CI [-.239, -.042]). Thus, males with good family functioning self-reported lower levels of perpetration (β = -.224, 95% CI [-.396, -.066]), which could translate into less victimization (actor effect). For women, however, this relationship was not significant: perpetration did not seem to vary at different levels of family functioning. In the case of women, the entire effect was due to a direct effect: the perception of good family functioning is directly and negatively related (β = -.065, 95% CI [-.138, -.019]) to the experience of victimization.

Finally, relationship duration showed a direct positive effect on males' (β = .045, 95% CI .025, .070]) and females' (β = .069, 95% CI [.039, .104]) perpetration, and a significant and positive indirect effect on both males' and females' victimization via their own and partner perpetration (see Table 3 for indirect effects results). These results suggested that the longer the relationship lasted, the more likely was to self-report IPV perpetration and victimization episodes on the part of both partners.

Discussion

Using data from 242 heterosexual couples, this study examined the dyadic patterns of IPV perpetration and victimization and the potential influence of the individual (sexist attitudes), the family of origin (family functioning), and the couple characteristics (length of the relationship). To reach these aims, the APIM was used to estimate actor and partner effects and dyadic patterns.

The results of the current study provide relevant information about the violence patterns of the participating couples. Firstly, it has been observed that the actor effects are similar in males and females, in line with recent research (Herrero et al., 2020). As Herrero et al. (2020) have recently discussed, the actor effect probably reflects the existence of mutual IPV: the violent actor ends up also victimized by the violent response of the partner. These authors point out, however, that the actor effect may also incorporate a systematic bias beyond the existence of mutual aggression in the partner: the upward bias of victimization scores. This response bias consists of trying to equalize self-reported perpetration and victimization in order to make them congruent ("I insult because I have been insulted"). This systematic bias appears more frequently as perpetration increases and is not clearly observed in the case of zero perpetration. Herrero et al. (2020) showed that when partners present themselves as non-violent, this bias does not seem to occur.

The results suggested different relational patterns for males and females. For males, a plausible couple pattern for males' victimization exists: male-partner IPV victimization in heterosexual couples is better explained by his IPV perpetration and his female-partner's IPV perpetration. For females, the pattern was more unclear, with an average pattern between couple-oriented and actor-only. For women, k ranged between 0 and 1, which suggested that the actor-effect was more relevant than partner-effect. However, this non-specific pattern found for females is an average, so it is likely that some women victimization scores were strongly affected by their own perpetration (which could include the existence of mutual IPV as well as response biases). Alternatively, other participating women, might have had a greater partner effect. This explanation is hypothetical and further research should unravel the extent to which males and females maintain different IPV patterns within the couple.

When potentially influential covariates were included in the model significant effects were found. The results showed that hostile sexism is positively related to perpetration in males and, probably as a result, to victimization in females. These results are consistent with previous research, in which more sexist males also showed higher levels of positive attitudes toward partner abuse and more IPV perpetration (Juarros-Basterretxea et al., 2019). This would be the most studied way in which hostile sexism would affect the victimization of females: more hostile sexist males toward females would be more violent towards them and as a result they would feel more victimized. The results, however, also allow identifying other less visible effects of hostile sexism: males who maintain more hostile attitudes towards women also feel more victimized by their female partners. It is likely that both scores of hostile sexism and victimization in men covariate because they share a common source: if the relationship with the female partner is deteriorated, the global perception of women will also be adversely affected. And vice versa, hostile sexism towards women will most likely affect the interaction with a specific female partner. Thus, an increasing conflictive climate in the relationship could increase not only male-to-female IPV but also males' victimization. This perception bias could also explain higher victimization reports in sexist males, as a consequence of perceiving partner's attacks as regular behaviors. The similar effect of males' hostile sexism on their own perpetration and victimization can be explained accordingly to upwards victimization bias (Herrero et al., 2020). In the same way that hostile-sexist males show more positive attitudes and acceptance of IPV, they may try to make their victimization reports congruent with their perpetration reports if they consider that IPV is more acceptable when it is mutual (e. g., "I am not a sexist person, on the contrary, I am an egalitarian but I have to defend myself against the aggressions I receive"). Unfortunately, we do not have different temporary panels to delve into this type of explanation. Finally, when a male's hostile and benevolent sexism are both measured in the same research design, the former does appear to have any significant influence either with the male's perpetration not with victimization within the couple.

The influence of females' sexist attitudes toward women on IPV has been less studied, but some researchers have proposed that

they could act as a protecting factor against IPV (Allen et al., 2009), especially when women adhere to traditional gender roles (Glick et al., 2002). The results obtained in the current research did not permit supporting any protector effect of females' sexism toward women against their own victimization.

Regarding family of origin functioning, a significant negative effect on males' IPV perpetration and females' victimization was found. These results seem to suggest a differential pattern of intergenerational transmission of IPV: while less dysfunctional family of origin predicted lower rates of self-reported perpetration of IPV for males, it predicted lower victimization self-reported rates for females. Conflicts and violence in the family-of-origin dysfunctionalities have been related to developmental problems: males exposed to violence during childhood, for example, learn that violence is an acceptable way to interact with others in the family context (Capaldi et al., 2012; Godbout et al., 2017; Kimber et al., 2018; Jennings et al., 2017; Juarros-Basterretxea et al., 2019). On the contrary, the higher rates of victimization of females exposed to family-of-origin violence has been explained due to the existence of psychological deficits which increase the tendency to be engaged in less secure and violent relationship in adulthood, thus increasing the likelihood of partner victimization when adults (Herrero et al., 2018; Ørke et al., 2018; Torres et al., 2013). Our results suggest that when families raise their children with adequate attention to their primary psychological needs, their children will be less likely to incorporate aggressive interpersonal strategies within the couple as adults.

Finally, males' and females' IPV perpetration scores were higher as the length of the relationship was longer, which in turn increased the victimization. This result is consistent with previous research in which higher frequency and more varied IPV was found to be related with longer relationships (Cooper et al., 2021; Kennedy et al., 2018; Lafontaine et al., 2021; Swiatlo et al., 2020). Also, the risk of bidirectional psychological IPV occurrence has been found to be higher in longer-term couples (marriage and cohabiting) (Hu et al., 2021; Lafontaine et al., 2021). In these cases, the increase of shared time between dyad members could increase the potential conflictive situations and, thus, the conflicts (Hu et al., 2021) which might trigger IPV episodes within the couple.

Strengths and Limitations

The current research had strengths and limitations. In the first place, the use of couples as a unit of analysis allowed us to address some limitations that have been pointed out in studies on single informants of the couple (Hardesty & Ogolsky, 2020; Marshall et al., 2021; Riesgo et al., 2019). Undoubtedly, the use of information from both partners allows a more refined analysis of relational patterns. Likewise, by incorporating the self-reports of perpetration and victimization of both members of the couple into the study, statistical control for potential systematic biases are possible. The estimated APIMs allow us to partially control some of these potential methodological limitations, which increases the generalizability of the results. In this sense, many of the statistical techniques commonly used in this field (ANOVAs, linear regressions, etc.) assume an independence of the observations, when this is probably not fulfilled in the study of couples, since, for example, the victimization of one member is dependent on the perpetration of the other. Not taking into account the dependence of the observations can increase type I error and negatively affect the statistical inference process, thus biasing the results of the studies.

While studies of intimate partner violence using APIMs are not completely uncommon, measures of perpetration and victimization are rarely incorporated together in this type of studies. Moreover, the addition of personal, family, and relationship covariates in the estimated models is often neglected. Overall, the analysis strategy followed in this study has allowed us not only to potentially control for some response and statistical biases, but also to jointly analyze the influence of third variables that might also account for IPV within the couple.

Despite its strengths, this research also has potential limitations. In the first place, the covariates analyzed in the model, although relevant, are in any case limited, and subsequent work should analyze a broader set of risk factors (Akhter & Wilson, 2016; Cummings et al., 2013; Hammock, et al., 2017; Heise, 1998; Herrero et al., 2016; Herrero et al., 2017; Juarros-Basterretxea et al., 2018, 2022; Tonsing, 2011) from a dyadic perspective. The dyadic data analysis of IPV is a promising technique that may be enriched by the empirical evidence found on single informant studies. New studies in this field should contrast that evidence in comprehensive models tested from a dyadic perspective. These more comprehensive dyadic approaches would also benefit from the incorporation of data on proactive and reactive (or defensive) IPV perpetration. This may help understand the self-defensive IPV perpetration strategies of males and females (Babcock et al., 2019; Straus, 2012; Straus & Mickey, 2012). Finally, the participating couples were all heterosexual and belonged to the general population, which raises the question of the extent to which these results are generalizable to at-risk populations, same-sex couples, etc. (Edwards et al., 2015; Harden et al., 2022; Herrero et al., 2020; Laskey et al., 2019; Peitzmeier et al., 2020; Rojas-Solís et al., 2019).

In general, our study points out the importance of incorporating dyadic data on perpetration and victimization for the study of IPV. The use of appropriate statistical techniques – in our case, APIM – and the inclusion of variables at different levels of analysis – individual, family, relationship, community, etc. – may allow us for a more comprehensive analysis of both the patterns of IPV in the couple and its most relevant predictors.

Conflict of Interest

The authors of this article declare no conflict of interest.

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