

## Inversion of traditional gender roles and intimate partner violence against pregnant women

Inversão de papéis tradicionais de gênero e violência por parceiros íntimos contra gestantes

Inversión de los roles tradicionales de género y violencia doméstica contra mujeres embarazadas

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### Abstract

*This study analyzed the association between the inversion of traditional gender roles and exclusive psychological and physical/sexual intimate partner violence, in a cross-sectional study of Brazilian pregnant women, identified through prenatal services in the municipalities of São Luís, Maranhão State (n = 992) and Ribeirão Preto, São Paulo State (n = 943). The pregnant women ranged from 12 to 45 years. Inversion of traditional gender roles was assessed by calculating differences in age, education and occupation between pregnant women and their co-residing intimate partners and identifying the largest contribution to family income. The conceptual model was tested with structural equation modeling and showed acceptable fit. The prevalence of any type of intimate partner violence was 29.8% in São Luís and 20.1% in Ribeirão Preto. In both municipalities, pregnant women were more likely to suffer exclusive psychological and physical/sexual violence when they had the highest income in the family ( $p < 0.005$ ). In São Luís, physical/sexual violence was more common among women who were better educated than their partners (standardized coefficient,  $SC = -0.466$ ;  $p = 0.007$ ). In Ribeirão Preto, exclusive psychological violence was more frequent among women who had lower status occupations than their partners ( $SC = 0.236$ ;  $p = 0.004$ ). Inversion of traditional gender roles is associated with exclusive psychological and physical/sexual violence against pregnant women by their co-residing intimate partners. These findings suggest that women's empowerment at an individual level does not necessarily relieve them of intimate partner abuse in social contexts where traditional gender norms persist.*

*Gender-Based Violence; Interpersonal Relations; Intimate Partner Violence; Structural Models; Pregnancy*

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## Introduction

Intimate partner violence is a global public health problem and a common form of violence against women, with multiple negative repercussions for the health and well-being of women and their families<sup>1,2</sup>. Intimate partner violence is frequently linked to lower socioeconomic contexts<sup>3,4</sup>, and is also considered a manifestation of gender-based violence, exposing power inequalities in relationships and the domination of and discrimination against women by men<sup>2,5</sup>.

Worldwide, about 38% of women with an intimate partner report having suffered physical and/or sexual violence committed by a current or former partner<sup>1</sup>. However, the rates range from 4% in high income countries to more than 40% in low income contexts<sup>1,3,4,6,7</sup>. In Brazil, the *WHO Multi-Country Study* on women's health and domestic violence against women found a 46.4% prevalence of some type of Intimate partner violence in São Paulo, the largest Brazilian metropolis, and a 54.2% prevalence in the Zona da Mata of Pernambuco, an urban-rural area. The prevalence of physical violence against pregnant women was 8% for São Paulo and 11.1% for Pernambuco<sup>3</sup>.

Because of variation in rates of Intimate partner violence against women and their multiple adverse consequences, several studies have sought to identify factors associated with Intimate partner violence<sup>4,8,9,10</sup>. A recent analysis of data of 66 population-based surveys from 44 countries that used similar methodology found that gender norms (male authority over family behavior and acceptance of wife abuse) and gender discrimination (in access to land and to property) were associated with a greater occurrence of intimate partner violence, adjusted for women's age, schooling and economic development<sup>4</sup>.

Inequalities between women and men in their socially attributed roles and the way masculinity and femininity are understood in the family or other social institutions are historically determined. Many of them represent obstacles for women to thrive and have served to perpetuate gender-based violence and to prevent access to formal wage employment and secondary education<sup>1,4,5</sup>.

However, women's empowerment in a society with patriarchal and macho characteristics does not make them free from violence by an intimate partner. Older, more educated, better paid or women engaged in occupations of higher social status can be seen as a threat to male authority in the household-family environment, resulting in the use of violence by men to maintain their power<sup>11,12,13</sup>.

In a sample of pregnant women, this study hypothesizes that in a cultural context where males are valued more than females, women empowered through education and/or work may suffer increased intimate partner violence by challenging hierarchical gender norms. A second hypothesis tested in this study is that women older than their partners are at increased risk of intimate partner violence. Thus, the objective of this study was to investigate the impact of inverted traditional gender roles on intimate partner violence against pregnant women.

## Method

This cross-sectional study is nested in the *Brazilian Ribeirão Preto and São Luís Birth Cohort Studies* (BRISA in the Portuguese acronym), which investigated the etiological factors of preterm birth in two Brazilian municipalities with contrasting socioeconomic contexts, i.e., São Luís (Maranhão/Brazil) and Ribeirão Preto (São Paulo/Brazil).

### São Luís and Ribeirão Preto

The cities of São Luís and Ribeirão Preto are located respectively, in the Northeast and Southeast regions of Brazil, distinct regions in both demographic and socioeconomic characteristics<sup>14</sup>. In 2010, the municipality of São Luís, the capital city of the state of Maranhão, had a population of 1,014,837 inhabitants<sup>15</sup>, almost double the population of Ribeirão Preto (604,682 inhabitants)<sup>16</sup>. Mean per capita monthly family income was BRL 805.36 (approximately USD 446)<sup>15</sup> in São Luís and BRL 1,314.04 (approximately USD 728) in Ribeirão Preto<sup>16</sup>. In terms of health care, in 2011, only 41.4% of women giving birth to liveborn infants attended seven or more prenatal visits in São Luís (Brazilian Health Informatics Department – DATASUS. Cobertura de consultas de pré-natal: São Luís.

<http://tabnet.datasus.gov.br/cgi/tabcgi.exe?idb2012/f06.def>, accessed on 13/Jun/2019), as opposed to 77.3% in Ribeirão Preto (DATASUS. Cobertura de consultas de pré-natal: Ribeirão Preto. <http://tabnet.datasus.gov.br/cgi/tabnet.exe?pacto/2010/cnv/pactsp.def>, accessed on 13/Jun/2019). This year, there were 18,316 livebirths in São Luís<sup>14</sup> and 8,353 in Ribeirão Preto (DATASUS. Nascidos vivos: São Paulo: Ribeirão Preto. <http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sinasc/cnv/nvsp.def>, accessed on 20/Aug/2019).

### **Participants, samples and data collection in the BRISA prenatal cohort**

In the BRISA study, convenience samples were recruited due to the difficulty of obtaining a random sample from the population of pregnant women in São Luís and Ribeirão Preto.

The pregnant women recruited to the study were users of public or private prenatal care clinics and ultrasound services. Those with less than 20 weeks of gestational age were invited to participate when they satisfied the following criteria: having performed their first ultrasound test before 20 weeks of gestational age, having a singleton pregnancy and intending to give birth at one of the maternity hospitals of São Luís and Ribeirão Preto. The women who agreed to participate in the study were registered for an interview that took place from 20 to 25 weeks of gestational age. All pregnant women gave written informed consent before application of the questionnaires and completion of the tests, and responsible guardians provided consent for adolescents aged up to 17 years.

From February 2010 to June 2011, 1,447 pregnant women were interviewed in São Luís. In Ribeirão Preto, 1,400 women were interviewed from February 2010 to February 2011. A total of 410 women from São Luís and 435 from Ribeirão Preto were excluded from this analysis because they did not respond to the questions about violence, did not identify who perpetrated the violence against them or were victims of violence perpetrated by non-intimate partners (by family members, friends, acquaintances or unknown agents). Furthermore, 45 women in São Luís and 22 in Ribeirão Preto were not interviewed at the birth of their children. Thus, the final São Luís and Ribeirão Preto samples consisted of 992 and 943 pregnant women, respectively. The smallest sample size obtained ( $n = 943$ ) can be used to identify differences between proportions of 8% for prevalence around 20% with 90% power.

Interviews were held in a private room to ensure confidentiality and were all performed by female interviewers. Questions about violence and social support were asked as part of a self-completed questionnaire and information about demographic and socioeconomic characteristics was obtained in interviews.

Training of interviewers consisted of detailed description of the research objectives and methods, data collection logistics, reading and discussion of all questionnaires and instructions manuals. Interviewers performed three interviews under strict supervision when errors were detected and corrected. A pilot study was performed to ensure that all phases of data collection were being performed correctly. Since questions about violence were self-applied and confidential, interviewers were not aware of the respondent's answers. Women were instructed to look for services and support networks in cases of violence.

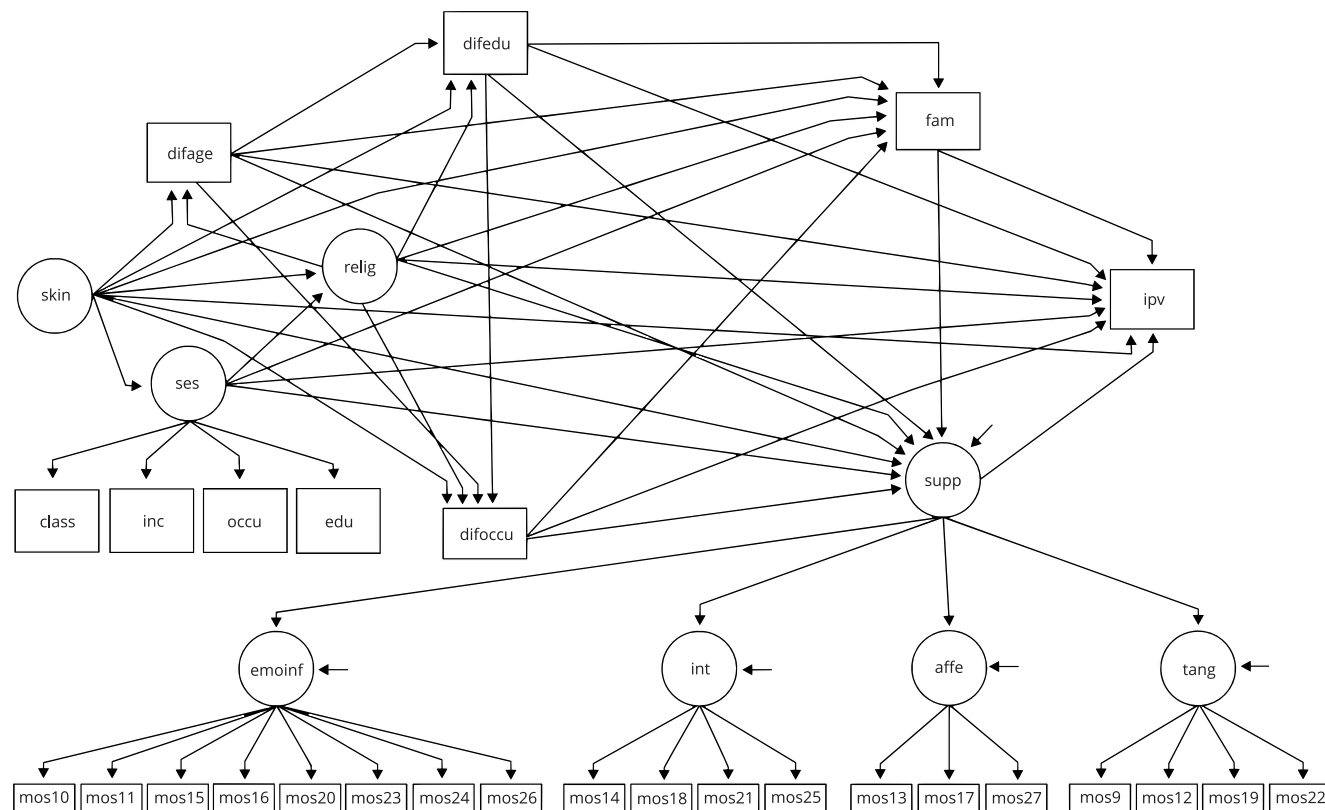
### **Variables and conceptual model**

In the conceptual model (Figure 1), the variable woman's self-reported skin color occupied the most distal position, followed by socioeconomic status, woman's religion, variables that measured the inversion of traditional gender roles of the women and their co-residing intimate partners and social support, with exclusive psychological and physical/sexual violence by intimate partner as the outcomes. The variables woman's self-reported skin color, socioeconomic status and woman's religion were treated as confounders.

Socioeconomic status, social support and physical/sexual violence were analyzed as latent variables (or constructs). Socioeconomic status was investigated as a first-order factor and social support as a second-order factor. Exclusive psychological violence was investigated as an ordinal categorical variable and physical/sexual violence as a first-order latent variable.

**Figure 1**

Structural equation modeling of inequalities in relationships regarding intimate violence against pregnant women.



affe: affectionate support; class: economic class; difage: age differences between pregnant women and co-residing intimate partners; difedu: educational differences between pregnant women and co-residing intimate partners; difoccu: occupational differences between pregnant women and co-residing intimate partners; edu: years of study of the woman; emoinf: emotional/informational support; fam: the person with the highest financial contribution to family income; inc: family income; ipv: exclusive psychological violence or physical/sexual violence by the intimate partner; int: positive social interaction support; mos: *Medical Outcomes Study*; occu: occupation of the person with the highest financial contribution to family income; relig: woman's religion; ses: socioeconomic status; skin: woman's self-reported skin color; supp: social support; tang: tangible support.

The variables woman's self-reported skin color (skin) and woman's religion (relig) were collected after delivery before hospital discharge (from May 2010 to November 2011). Woman's self-reported skin color was used as an exogenous dichotomous variable, categorized into white vs non-white. Woman's religion was categorized into Catholic and Evangelical, the two predominant religions in Brazil.

Socioeconomic status was defined as the relative socioeconomic position that the individual or group occupies in a society<sup>17</sup>. The latent variable socioeconomic status was constructed based on the following indicator variables: (a) years of study of the pregnant woman (edu), categorized as up to 4 years, 5 to 8 years, 9 to 11 years, and 12 years or more; (b) occupation of the person with the highest income in the family (occu), categorized as unskilled manual, semi-specialized manual, office duties, high-level professional, and administrator/manager/director/owner; (c) economic class (class), categorized as D/E, C and A/B, consisting of ownership of assets (color television, radio, bathroom, automobile, full-time maid, washing machine, videocassette and/or DVD player, freezer, and refrigerator) and educational level of the person with the highest income in the family, with categories A

and B having greater purchasing power; and (d) monthly family income in minimum wages (inc), categorized as less than one national minimum wage (approximately USD 290.00) for 2010, 1 to less than 3, 3 to less than 5, and 5 or more. The instrument used to measure economic class was that proposed by the Brazilian Association of Research Companies for 2010<sup>18</sup>.

Inequalities in relationships between women and their co-residing intimate partners reflecting inversion of traditional gender roles were measured as differences between intimate partners in terms of age, education and occupation, and by the highest financial contribution to the family as well. Inequalities in relationships have been defined as expression of gender conflicts when they represent inversions of socially expected roles within traditional gender culture<sup>4,5,19</sup>.

Age differences (difage) between co-residing intimate partners were coded as follows: "1" if the woman's age minus partner's age > 5 years; "2" if the woman's age minus partner's age = 1 to 5 years; "3" woman's age minus partner's age = 0; "4" if partner's age minus woman's age = 1 to 5 years; and "5" if partner's age minus woman's age > 5 years.

Differences in years of education (difedu) and occupation (difoccu) between co-residing intimate partners were coded as follows: (a) "1" if the situation of the pregnant woman was superior to that of her intimate partner; "2" if the situation of the pregnant woman was equal to that of her intimate partner; and "3" if the situation of the pregnant woman was inferior to that of her intimate partner. The following occupations were considered in increasing hierarchical order: unskilled manual, semi-specialized manual, office duties, high-level professional, and administrator/manager/director/owner.

The person making the greatest contribution to family income (fam) was coded as: 1 = the pregnant woman; 2 = any subjects other than the pregnant woman or her partner; and 3 = the intimate partner.

Social support concerns resources offered by a social network to individuals in situations of need<sup>20,21</sup> and was measured as functional social support (supp) as proposed by the *Medical Outcomes Study* (MOS). Four dimensions of functional social support (supp) were evaluated: tangible support, emotional/informational support, affectionate support, and positive social interaction support. The five response options were never, rarely, at times, almost always, and always<sup>21</sup>.

intimate partner violence was considered to have occurred when the interviewed woman responded affirmatively to at least one of the 13 questions of the *World Health Organization Violence against Women* (WHO-VAW) instrument<sup>22</sup> and indicated as the perpetrator a current/former intimate partner. Based on this definition, the overall intimate partner violence prevalence and the prevalence of the psychological, physical and sexual types were calculated (Table 1).

For psychological violence, the pregnant women were asked about insults, humiliations, intimidation and threats during the current pregnancy. Regarding physical violence during pregnancy, the women interviewed reported slaps, shoves, shakes, punches, kicks, strangling, deliberate burns and the use of weapons against them. Regarding sexual violence, they were asked about forced sex relations and sexual practices considered to be humiliating. The response options for each of these questions were none, once, a few times, and many times<sup>22</sup>. In the present study, women submitted to physical and sexual violence were excluded from the investigation of exclusive psychological violence by the intimate partner. The questions were formulated exactly as in the WHO-VAW instrument<sup>22</sup>, without mentioning the word violence.

Evidence of validity of the WHO-VAW instrument was previously shown in two Brazilian studies<sup>23,24</sup>. One of them included the same two samples of pregnant women used in this report. Cronbach's alpha was greater than 0.70 for general, psychological and physical violence<sup>24</sup>.

### **Descriptive analysis and structural equation modeling**

Frequencies and percentages were calculated using Stata software, version 15.1 (<https://www.stata.com>). Structural equation modeling (SEM) was used to evaluate the conceptual model through the Mplus software, version 7.31 (<https://www.statmodel.com/>). SEM was chosen over multiple linear regression as it allowed us to consider measurement error by modeling violence as a latent variable and to estimate direct and indirect effects of the observed and latent variables on psychological and physical/sexual violence<sup>25</sup>.

**Table 1**

Descriptive analyses of overall intimate partner violence, and psychological, physical and sexual types. São Luís (Maranhão State) and Ribeirão Preto (São Paulo State) prenatal cohorts, Brazil, 2010-2011.

Descriptive analyses	São Luís		Ribeirão Preto		p-value
	n	%	n	%	
Intimate partner violence *	1,033		950		< 0.001
None	725	70.2	759	79.9	
Once	75	7.3	37	3.9	
Few times	59	5.7	38	4.0	
Many times	174	16.8	116	12.2	
Psychological violence	1,037		952		< 0.001
None	740	71.4	765	80.4	
Once	78	7.5	39	4.1	
Few times	74	7.1	47	4.9	
Many times	145	14.0	101	10.6	
Physical violence	1,034		959		0.042
None	923	89.3	877	91.4	
Once	58	5.6	29	3.0	
Few times	19	1.8	17	1.8	
Many times	34	3.3	36	3.8	
Sexual violence	1,036		962		0.075
None	1,006	97.1	942	98.0	
Once	16	1.5	4	0.4	
Few times	5	0.5	7	0.7	
Many times	9	0.9	9	0.9	

\* Any type of intimate partner violence.

Since all variables were encoded categorically, the mean-and-variance-adjusted weighted least squares estimator with theta parameterization was used.

To determine whether the model showed adequate fit we considered: (a)  $p < 0.08$  for the *Root Mean Square Error of Approximation* (RMSEA) <sup>26,27</sup>; (b) values higher than 0.95 for the *Comparative Fit Index and the Tucker Lewis Index* (CFI/TLI) <sup>25,26,27</sup>; and (c) *Weighted Root Mean Square Residual* (WRMR) values of less than 1 <sup>28</sup>.

In the analyses of the standardized coefficients (SC) for the construction of the latent variables (confirmatory factor analysis), a factor loading higher than 0.5 with  $p < 0.05$  was considered to indicate acceptable correlation between the indicator variable and the construct <sup>25</sup>.

Direct and indirect effects of the latent and observed variables were assessed in the final model, with an effect being assumed to be present when  $p < 0.05$ .

The modindices command was used for suggestions of modifications of the initial hypothesis. When the value of the modification index was higher than 10 and the proposed modifications were theoretically plausible, a new model was elaborated and analyzed.

The final São Luís model was re-tested using the sample from Ribeirão Preto for validation.

### **Ethics statement**

The project and consent form for participation in the BRISA study, including the investigation of violence against pregnant women, were approved by the Research Ethics Committees of the University Hospital of the Federal University of Maranhão (protocol n. 4771/2008-30) and the University Hospital of the Ribeirão Preto Medical School, University of São Paulo (protocol n. 4116/2008).

## Results

In the city of São Luís, the ages of pregnant women ranged from 14 to 45 years (median 26 years) and intimate co-resident partners from 17 to 67 years (median of 29 years). In Ribeirão Preto, the ages of the pregnant women had a median of 25, ranging from 12 to 45 years, and their partners ranged from 15 to 63, with a median of 29 years.

The percentage of pregnant women belonging to families of economic class A/B was higher in Ribeirão Preto (26.7%) than in São Luís (15.5%). In more than 70% of families in both municipalities, the person with the highest income had a manual occupation. The percentage of pregnant women with 9 or more years of schooling was higher in São Luís (86.8%) than in Ribeirão Preto (71.4%). In both municipalities, approximately 70% of the intimate partners were older than the pregnant women (68.9% in São Luís and 71.7% in Ribeirão Preto) and about 50% of them had occupations with higher status than the women. Individuals with higher income were more frequently co-residing with intimate partners (approximately 60% in São Luís and 66% in Ribeirão Preto). About 11% of women interviewed were the highest earners in the family in the two municipalities. In Ribeirão Preto, the percentage of women who had white skin color (50.8%) was three times as high as in São Luís (16.6%). There were more catholic women in São Luís than in Ribeirão Preto (Table 2).

**Table 2**

Characteristics of pregnant women, their intimate partners and the person with the highest income in the family. São Luís (Maranhão State) and Ribeirão Preto (São Paulo State) prenatal cohorts, Brazil, 2010-2011.

Variables	São Luís		Ribeirão Preto		p-value
	n	%	n	%	
<b>Variables measured in the prenatal period</b>					
Economic class *			884		< 0.001
D/E	140	14.7	107	12.1	
C	667	69.8	541	61.2	
A/B	148	15.5	236	26.7	
Family income (in minimum wages)	962		851		< 0.001
Less than one	56	5.8	28	3.3	
1 to less than 3	541	56.3	413	48.5	
3 to less than 5	227	23.6	257	30.2	
5 or more	138	14.3	153	18.0	
Occupation of the person with the highest income in the family	937		902		< 0.001
Unskilled manual laborer	278	29.7	309	34.3	
Semi-specialized manual laborer	383	40.9	434	48.1	
Specialized manual laborer	51	5.4	45	5.0	
Office duties	149	15.9	78	8.6	
High-level professional	47	5.0	27	3.0	
Administrator/Manager/Director/Owner	29	3.1	9	1.0	
Years of study of the pregnant woman	991		925		< 0.001
0-4	14	1.4	37	4.0	
5-8	117	11.8	228	24.6	
9-11	746	75.3	586	63.4	
12 or more	114	11.5	74	8.0	

(continues)

Table 2 (continued)

Variables	São Luís		Ribeirão Preto		p-value
	n	%	n	%	
Differences in age between the women and the co-residing intimate partners	810		790		0.077
Pregnant woman – partner > 5 years	50	6.2	38	4.8	
Pregnant woman – partner = 1-5 years	145	17.9	114	11.4	
Pregnant woman – partner = 0	57	7.0	72	9.1	
Partner – pregnant woman = 1-5 years	302	37.3	327	41.4	
Partner – pregnant woman > 5 years	256	31.6	239	30.3	
Differences in schooling between the women and the co-residing intimate partners	798		731		< 0.001
Woman's schooling > intimate partner	175	21.9	193	26.4	
Woman's schooling = intimate partner	540	67.7	426	58.3	
Woman's schooling < intimate partner	83	10.4	112	15.3	
Differences in occupation between the women and the co-residing intimate partners	802		771		0.720
Woman's occupation > intimate partner	341	42.5	343	44.5	
Woman's occupation = intimate partner	49	6.1	43	5.6	
Woman's occupation < intimate partner	412	51.4	385	49.9	
Person with the highest financial contribution in the family	990		936		0.018
Pregnant woman	117	11.8	100	10.7	
Others	282	28.5	220	23.5	
Intimate partner	591	59.7	616	65.8	
<b>Variables measured at the time of the children's birth</b>					
Woman's self-reported skin color	992		943		< 0.001
White	165	16.6	479	50.8	
Others	827	83.4	464	49.2	
Woman's religion	836		761		0.020
Catholic	540	64.6	448	58.9	
Evangelical	296	35.4	313	41.1	

\* Economic class was categorized as D/E, C and A/B, based on ownership of assets and educational level of the person with the highest income in the family, with categories A and B having greater purchasing power.

The prevalence of overall intimate partner violence was 29.8% in São Luís, with 7.3% of women reporting one episode, 5.7% reporting few episodes, and 16.8% reports of many episodes. In Ribeirão Preto, the prevalence was 20.1%, with 3.9% of the subjects reporting one episode, 4% reporting a few episodes, and 12.2% many episodes. The occurrence of psychological violence and physical violence was greater in São Luís than in Ribeirão Preto, but there was no difference between these two municipalities in relation to sexual violence (Table 1).

The proposed model showed acceptable fit for the RMSEA, CFI and TLI indicators (Table 3) and there were no plausible suggestions for modification. Each indicator of the latent variables had factor loadings higher than 0.5 with p-values of less than 0.001, except for occupation of the person with the highest income in the family in both São Luís and Ribeirão Preto (Table 4).

In São Luís, pregnant women were more likely to suffer exclusive psychological violence by a co-residing intimate partner if they had the highest income in the family (SC = -0.202; p-value, p = 0.002). This was mainly a direct effect (SC = -0.182, p = 0.005), but there was also a smaller indirect effect mediated by low social support (SC = -0.020, p = 0.047). Also in São Luís, physical/sexual violence by a co-residing intimate partner was reported more frequently by women with higher educational attainment than their partners (SC = -0.466, p = 0.007), and among those who earned the highest income in the family (SC = -0.184, p = 0.035). Effects on physical/sexual violence related to the wom-



**Table 3**

Indices of model fit for exclusive psychological violence and physical/sexual violence. São Luís (Maranhão State) and Ribeirão Preto (São Paulo State) prenatal cohorts, Brazil, 2010-2011.

Fit indices	São Luís	Ribeirão Preto
Exclusive psychological violence *		
$\chi^2$	1594.619	1915.806
Degrees of freedom	372	372
p-value	< 0.001	< 0.001
RMSEA	0.058	0.066
90%CI	0.055-0.060	0.063-0.069
p-value	< 0.001	< 0.001
CFI	0.976	0.976
TLI	0.972	0.972
WRMR	1.510	1.682
Physical/Sexual violence **		
$\chi^2$	1599.774	1930.729
Degrees of freedom	400	400
p-value	< 0.001	< 0.001
RMSEA	0.055	0.064
90%CI	0.052-0.058	0.061-0.067
p-value	0.002	< 0.001
CFI	0.977	0.976
TLI	0.973	0.972
WRMR	1.481	1.640

90%CI: 90% confidence interval; CFI: *Comparative Fit Index*; RMSEA: *Root Mean Square Error of Approximation*; TLI: *Tucker Lewis Index*; WRMR: *Weighted Root Mean Square Residual*.

\* Exclusive psychological violence was investigated as an ordinal categorical variable.

\*\* Physical/Sexual violence was investigated as a first-order latent variable.

an having the highest income in the family occurred only indirectly, mediated by low social support ( $SC = -0.040$ ,  $p = 0.023$ ) (Table 4).

The results for Ribeirão Preto showed that exclusive psychological violence was more frequent among pregnant women who earned the highest income in the family ( $SC = -0.189$ ,  $p = 0.007$ ) and when the co-residing intimate partners had higher status occupations than the women ( $SC = 0.236$ ,  $p = 0.004$ ). In addition to the direct effects of these two variables on exclusive psychological violence, there was a small indirect negative effect of a higher status occupation of the intimate partner ( $SC = -0.061$ ,  $p = 0.030$ ) mediated by the woman having the highest income in the family ( $SC = -0.05$ ,  $p = 0.027$ ). Also, in Ribeirão Preto, physical/sexual violence was more frequent when the income of the woman was higher than that of her co-residing intimate partner ( $SC = -0.217$ ,  $p = 0.021$ ). This was a direct effect ( $SC = -0.235$ ,  $p = 0.010$ ) without evidence of mediation (Table 4).

Woman's self-reported skin color, socioeconomic status, and woman's religion were not associated with intimate partner violence.

**Table 4**

Standardized coefficient (SC), standard errors (SE) and p-values for each indicator of latent variables and total, direct and indirect effects in the associations between indicator and latent variables on exclusive psychological violence and physical/sexual violence. São Luís (Maranhão State) and Ribeirão Preto (São Paulo State) prenatal cohorts, Brazil, 2010-2011.

Paths	São Luís			Ribeirão Preto		
	SC	SE	p-value	SC	SE	p-value
<b>Indicators of latent variables</b>						
Exclusive psychological violence						
ses						
ses by class	0.631	0.039	< 0.001	0.588	0.050	< 0.001
ses by inc	0.622	0.040	< 0.001	0.593	0.050	< 0.001
ses by occu	0.457	0.042	< 0.001	0.428	0.051	< 0.001
ses by edu	0.826	0.049	< 0.001	0.786	0.061	< 0.001
supp						
supp by int	0.980	0.005	< 0.001	0.983	0.005	< 0.001
supp by emoinf	0.952	0.006	< 0.001	0.966	0.004	< 0.001
supp by affe	0.943	0.008	< 0.001	0.934	0.008	< 0.001
supp by tang	0.860	0.013	< 0.001	0.928	0.007	< 0.001
Physical/Sexual violence						
ses						
ses by class	0.632	0.040	< 0.001	0.589	0.050	< 0.001
ses by inc	0.624	0.040	< 0.001	0.594	0.050	< 0.001
ses by occu	0.455	0.042	< 0.001	0.426	0.052	< 0.001
ses by edu	0.824	0.049	< 0.001	0.785	0.061	< 0.001
supp						
supp by int	0.980	0.005	< 0.001	0.983	0.005	< 0.001
supp by emoinf	0.951	0.006	< 0.001	0.966	0.004	< 0.001
supp by affe	0.944	0.008	< 0.001	0.934	0.008	< 0.001
supp by tang	0.860	0.013	< 0.001	0.928	0.007	< 0.001
physexv						
physexv by phyv	0.714	0.111	< 0.001	0.870	0.144	< 0.001
physexv by sexv	0.742	0.122	< 0.001	0.810	0.144	< 0.001
<b>Total, direct and indirect effects</b>						
Exclusive psychological violence						
skin						
total effect	-0.051	0.046	0.266	-0.103	0.055	0.060
direct effect	0.051	0.046	0.274	-0.091	0.062	0.141
indirect effect	0.000	0.015	0.991	-0.012	0.034	0.720
ses						
total effect	0.085	0.056	0.131	0.011	0.075	0.887
direct effect	-0.001	0.125	0.994	0.140	0.114	0.220
indirect effect	0.086	0.095	0.362	-0.129	0.069	0.060
relig						
total effect	-0.052	0.068	0.443	0.074	0.075	0.325
direct effect	-0.027	0.070	0.700	0.087	0.076	0.250
indirect effect	-0.025	0.021	0.223	-0.013	0.026	0.610
difage						
total effect	0.027	0.055	0.625	-0.123	0.066	0.062
direct effect	0.041	0.055	0.447	-0.146	0.071	0.039
indirect effect	-0.015	0.018	0.404	0.023	0.026	0.384

(continues)

Table 4 (continued)

Paths	São Luís			Ribeirão Preto		
	SC	SE	p-value	SC	SE	p-value
difedu						
total effect	-0.165	0.115	0.150	0.029	0.101	0.777
direct effect	-0.153	0.121	0.207	0.041	0.103	0.693
indirect effect	-0.013	0.029	0.658	-0.012	0.029	0.672
difoccu						
total effect	-0.010	0.067	0.881	0.236	0.081	0.004
direct effect	0.053	0.073	0.467	0.297	0.082	< 0.001
indirect effect	-0.063	0.022	0.004	-0.061	0.028	0.030
via fam	-	-	-	-0.056	0.025	0.027
fam						
total effect	-0.202	0.064	0.002	-0.189	0.070	0.007
direct effect	-0.182	0.065	0.005	-0.202	0.069	0.003
indirect effect	-0.020	0.010	0.047	0.013	0.012	0.254
via supp	-0.020	0.010	0.047	-	-	-
supp						
total effect	-0.156	0.055	0.005	-0.249	0.062	< 0.001
direct effect	-0.156	0.055	0.005	-0.249	0.062	< 0.001
Physical/Sexual violence						
skin						
total effect	-0.027	0.070	0.694	-0.013	0.067	0.848
direct effect	-0.063	0.073	0.386	-0.065	0.071	0.360
indirect effect	0.036	0.029	0.213	0.052	0.034	0.125
ses						
total effect	-0.121	0.077	0.114	-0.087	0.075	0.246
direct effect	-0.367	0.180	0.041	-0.118	0.116	0.311
indirect effect	0.245	0.139	0.078	0.031	0.068	0.651
relig						
total effect	0.078	0.092	0.394	0.094	0.091	0.302
direct effect	0.117	0.099	0.238	0.107	0.090	0.232
indirect effect	-0.039	0.038	0.311	-0.014	0.028	0.624
difage						
total effect	-0.097	0.079	0.221	-0.134	0.088	0.131
direct effect	-0.094	0.081	0.246	-0.111	0.084	0.189
indirect effect	-0.003	0.028	0.915	-0.023	0.028	0.413
difedu						
total effect	-0.466	0.172	0.007	-0.213	0.113	0.059
direct effect	-0.411	0.176	0.020	-0.194	0.111	0.080
indirect effect	-0.054	0.039	0.170	-0.019	0.025	0.460
difoccu						
total effect	-0.044	0.092	0.636	-0.045	0.098	0.648
direct effect	0.020	0.096	0.836	0.027	0.102	0.787
indirect effect	-0.063	0.030	0.036	-0.072	0.033	0.029
fam						
total effect	-0.184	0.087	0.035	-0.217	0.094	0.021
direct effect	-0.144	0.085	0.093	-0.235	0.093	0.010
indirect effect	-0.040	0.018	0.023	0.018	0.016	0.250
via supp	-0.040	0.018	0.023	-	-	-

(continues)

**Table 4 (continued)**

Paths	São Luís			Ribeirão Preto		
	SC	SE	p-value	SC	SE	p-value
supp						
total effect	-0.312	0.085	< 0.001	-0.339	0.075	< 0.001
direct effect	-0.312	0.085	< 0.001	-0.339	0.075	< 0.001

affe: affectionate support; by: Mplus command to derive latent variables; class: economic class; difage: age differences between pregnant women and co-residing intimate partners; difedu: educational differences between pregnant women and co-residing intimate partners; difoccu: occupational differences between pregnant women and co-residing intimate partners; edu: years of study of the pregnant woman; emoinf: emotional/informational support; fam: the person with the highest financial contribution to family income; inc: family income; int: positive social interaction support; occu: occupation of person with the highest income in the family; phyv: physical violence; physexv: physical/sexual violence; relig: woman's religion; sexv: sexual violence; skin: woman's self-reported skin color; supp: social support; ses: socioeconomic status; tang: tangible support.

## Discussion

In the municipalities of São Luís and Ribeirão Preto, pregnant women who had the highest income in the family were more frequently submitted to exclusive psychological and physical/sexual violence by an intimate partner. In São Luís, women with higher schooling than their partners also reported more episodes of physical/sexual violence. Thus, it seems that women who challenge traditional gender roles are at higher risk of suffering intimate partner violence, although in Ribeirão Preto psychological violence was more frequent when the women had lower status occupations than their partners.

Women's empowerment due to a higher income may have resulted in challenges to the gender rules that historically justify male authority over female behavior, resulting in exclusive psychological and physical/sexual violence. From this perspective, as women gain more power through their income, they deviate from traditional gender roles and start to question and challenge the dominant masculine culture, causing men to feel threatened and to resort to violence as a way of asserting their traditional roles of command in the family <sup>11,13,29,30</sup>.

Low social support mediated the association between women having higher income and the physical-sexual violence in São Luís. Low social support was tested as a mediating risk factor for violence against women because an inadequate social network may facilitate female isolation and violence against them <sup>30</sup>.

A study of 1,791 women and 1,640 men in Norway that investigated the association between partners' power relations and the occurrence of intimate partner violence detected an almost seven-fold increased risk of psychological and physical violence by an intimate partner when the woman's income was much higher than that of her partner. The explanation suggested by the authors was the fact that a man with an inferior status compared to his partner would feel less able to exert his masculinity and to fulfill socially expected traditional gender roles <sup>13</sup>. Another study, including 19,216 Nigerian women, also revealed that women who earned more than their spouses suffered more physical violence, a fact attributed by the authors to inequalities in relationships <sup>29</sup>.

In our study, while income was important, higher schooling of pregnant women when compared to their partners was also associated with more episodes of physical-sexual violence in São Luís. This might be explained by conservative views of male partners regarding traditional gender roles and by the more liberal ideas of more educated women with a higher social status regarding power relations, masculinity and femininity <sup>11,30</sup>. When facing a woman with higher education and more liberal ideas, an intimate partner may feel threatened in his masculinity and power, with consequent conflicts and violence <sup>13,29,30,31,32</sup>.

In the families of most women that participated in our study, intimate partners were the source of highest income in most families, and 87% of them were unskilled manual laborers. Psychological violence appeared to be a way of exerting traditional masculinity in a still conservative society regarding gender roles <sup>11,30</sup>.

Since the 1990s, Brazilian and international publications have been pointing out socioeconomic inequalities as factors contributing to intimate partner violence against women. From this perspective, violence is understood as a way for the man to recover his greater authority in a relationship with his partner <sup>2,4,12,13,29,30,31,32,33,34,35,36</sup>.

In Brazilian society, the traditional expectation is that men, usually older, better educated and better paid than their female partners (or otherwise the only source of income for the couple), will more often hold socially valued positions and provide economically for the family; whereas their wives will take care of the home and children, executing unpaid work <sup>11,35</sup>. Given this scenario, increased tensions may arise in relationships due to neglected housework, as women also gain higher education, wages and occupational status, and this may increase the controlling behavior of men and the risk of intimate partner violence for their partners <sup>11</sup>.

The prevalence of intimate partner violence in São Luís and Ribeirão Preto was higher than those found in other studies <sup>3,10</sup>. It may be that the use of a self-applied instrument, without the interference of an interviewer, contributed to this finding. In addition, before completing the self-administered questionnaire, it was stated that women would not have their answers identified, as their names were not recorded in the data collection instruments. Finally, violence against pregnant women was not the central issue in the BRISA survey. Violence was presented as one of the probable “causes of prematurity”, as well as maternal hypertension, depression and racial discrimination, which may have encouraged women to report the episodes of violence suffered.

The strengths of the present study are: (a) the use of structural equation modeling in the analyses, which permitted us to study how dichotomous, ordinal and latent categorical variables determine violence by intimate partners, and reduce measurement error; (b) in a conceptual model, we were able to investigate differences in age, income, occupation and years of study between intimate partners, as indicators of gender inequalities in the relationship of the couple; and (c) we validated this conceptual model in samples from two different municipalities with contrasting realities using the same methodology, thus increasing the robustness of the findings.

The limitations of this study were that the sample was not selected to be representative of the population of pregnant women in the two municipalities, data from non-residing intimate partners were not included, and there were some missing data on economic class and family income. Another limitation is that the elaboration of a conceptual model does not contemplate all the factors that determine the occurrence of violence, thus always being merely an approximation of reality. Although the study was based on convenience sampling, it should be considered that the sample was not obtained from services that primarily provide care for pregnant women in situations of violence, but was obtained from prenatal care services for pregnant women with different levels of gestational risk and in different socioeconomic and demographic situations. As such the study was able to address key issues of diversity, across racial, economic, educational, religious and age dimensions. Indeed, analysis of diversity between women of different socioeconomic conditions, and how that relates to their experiences of intimate partner violence, was the key objective of the study. Although the prevalence of intimate partner violence was higher than that found in other studies, it is possible that there was some degree of measurement bias (underreporting of violence). However, care was taken to ensure a confidential private environment and the questionnaire was self-administered, which tends to reduce this type of bias.

The present findings suggest that intimate partner violence in the municipalities of São Luís and Ribeirão Preto is gender-based and can be explained by gender inequalities that result in inversion of traditional gender roles and conservative male attitudes, so that empowerment of the pregnant woman by a higher income than her partner's seems to determine all kinds of violence even in contrasting socioeconomic realities. The current findings can help professionals in prenatal health settings understand the determinants of intimate partner violence, and future follow-up of the cohort will help identify how these factors influence future life experiences of these women.

## Contributors

M. T. S. S. B. Alves, R. F. L. Batista, L. S. Rodrigues, H. Bettioli, and R. C. Cavalli drafted the article. All authors reviewed and approved the final version to be published.

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## Resumo

O estudo analisou a associação entre a inversão de papéis tradicionais de gênero e violência psicológica exclusiva e física/sexual por parceiros íntimos, em um estudo transversal com gestantes brasileiras usuárias de serviços de pré-natal nos municípios de São Luís, Maranhão (n = 992) e Ribeirão Preto, São Paulo (n = 943). As gestantes tinham idades de 12 e 45 anos. A inversão dos papéis tradicionais de gênero foi avaliada calculando diferenças em idade, escolaridade e ocupação entre as gestantes e seus parceiros íntimos residentes, e a pessoa que mais contribuía para a renda familiar. O modelo conceitual foi testado com modelagem de equações estruturais e mostrou ajuste aceitável. A prevalência de qualquer tipo de violência cometida pelo parceiro íntimo foi de 29,8% em São Luís e 20,1% em Ribeirão Preto. Nos dois municípios, as gestantes mais frequentemente sofreram violência psicológica exclusiva e física/sexual quando eram a pessoa de maior renda na família ( $p < 0,005$ ). Em São Luís, violência física/sexual era mais comum entre mulheres com mais escolaridade em relação aos seus parceiros (coeficiente padrão,  $CP = -0,466$ ;  $p = 0,007$ ). Em Ribeirão Preto, violência psicológica exclusiva era mais frequente entre mulheres com ocupações de menor status em relação aos parceiros ( $CP = 0,236$ ;  $p = 0,004$ ). A inversão dos papéis de gênero tradicionais está associada à violência psicológica exclusiva e à violência física/sexual contra as gestantes por seus parceiros íntimos. Os achados sugerem que o empoderamento individual das mulheres não necessariamente protege contra o abuso pelos parceiros íntimos em contextos sociais em que persistem as normas de gênero tradicionais.

Violência de Gênero; Relações Interpessoais;  
Violência por Parceiro Íntimo; Modelos  
Estruturais; Gravidez

## Resumen

Este estudio analizó la asociación entre la inversión de los tradicionales roles de género y la violencia doméstica exclusiva psicológica y física/sexual, en un estudio transversal con mujeres embarazadas brasileñas, identificadas a través de los servicios prenatales en los municipios de São Luís, Maranhão (n = 992) y Ribeirão Preto, São Paulo (n = 943). Las mujeres embarazadas se encontraban en un rango de edad entre los 12 y los 45 años. La inversión de los roles tradicionales de género fue evaluada calculando las diferencias de edad, educación y ocupación entre las mujeres embarazadas y las parejas que residen con ellas, e identificando quién realiza la contribución más grande a los ingresos familiares. El modelo conceptual fue probado con el modelado de ecuaciones estructurales, y mostró un ajuste aceptable. La prevalencia de cualquier tipo de violencia por parte de la pareja fue del 29,8% en São Luís y 20,1% en Ribeirão Preto. En ambos municipios, las mujeres embarazadas fueron más proclives a sufrir violencia exclusiva psicológica y física/sexual, cuando contaban con los ingresos más altos en la familia ( $p < 0,005$ ). En São Luís, la violencia física/sexual fue más común entre mujeres que estuvieron mejor educadas que sus parejas (coeficiente estandarizado,  $CE = -0,466$ ;  $p = 0,007$ ). En Ribeirão Preto, la violencia exclusiva psicológica fue más frecuente entre mujeres que tenían ocupaciones de estatus inferior al de sus parejas ( $CE = 0,236$ ;  $p = 0,004$ ). La inversión de roles tradicionales está asociada con la violencia exclusiva psicológica y física/sexual contra las mujeres embarazadas por parte de las parejas que residen con ellas. Estos hallazgos sugieren que el empoderamiento de las mujeres en un nivel individual no las alivia necesariamente del abuso por parte sus parejas en contextos sociales donde persisten las normas tradicionales de género.

Violencia de Gênero; Relaciones Interpersonales;  
Violencia de Pareja; Modelos Estructurales;  
Embarazo

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