

Intimate Partner Violence and Mental Health Within the Community During Lockdown of Covid-19 Pandemic

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2 **covid-19 pandemic**

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5 **Uncertainty.**

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16

17 **Abstract**

18 Background: This study took place in the context of the COVID-19 pandemic. The restrictive
19 confinement measures put in place to counter the virus' spread could have major consequences
20 for the mental health and intimate relationships between romantic partners. The present research
21 assesses the association between lockdown conditions (such as time spent at home, living
22 environment, proximity to contamination and social contacts), mental health (including
23 intolerance of uncertainty, anxiety and depression) and the intimate partner violence within the
24 community. This study also proposes to evaluate the indirect effect of anxiety and depression
25 on the relationship between intolerance of uncertainty and intimate partner violence (physical
26 assault and psychological aggression). Methods: 1532 adults (80.8% of women, $M_{age}=35.34$)
27 were recruited from the general population through an online self-report questionnaire
28 completed during the lockdown. All participants were engaged in a romantic relationship and
29 lived with their partner. Sociodemographic data, lockdown conditions, mental health and

30 intimate partner related-variables were assessed. Results: Results demonstrate that the
31 prevalence of physical assault was significantly higher in men, whereas the prevalence of
32 psychological aggression was significantly higher in women. Men reported significantly more
33 increased violence during lockdown. Women, on the other hand, were more anxious and more
34 intolerant of uncertainty. No difference between men and women was found for depression.
35 Anxiety and depression significantly mediate the relationship between intolerance of
36 uncertainty and physical assault and psychological aggression. Sex does not moderate the
37 mediation. Conclusion: Clinical implications for public health policy are highlighted, namely
38 the necessity to consider the impact of uncertainty related to crises in increasing the risk of
39 intimate violence between partners, and especially individual vulnerability to mental health
40 problems associated.

41 **1. Introduction**

42 On March 11, 2020, the WHO declared the COVID-19 outbreak a pandemic as the virus spread
43 worldwide. One of the disturbing features of an emerging epidemic is that, as long as the precise
44 cause and evolution are unknown, the uncertainty engendered by the situation can increase the
45 level of psychosocial morbidity [1, 2, 3, 4, 5, 6]. In an attempt to control this pandemic,
46 governments across the world have taken action through restrictive measures unprecedented in
47 the history of public health, such as lockdowns, social distancing and voluntary self-isolation
48 [7, 8, 9, 10]. These restrictive confinement measures put in place to counter the virus' spread
49 could have major consequences for the mental health. Indeed, several studies conducted in
50 China and in Europe, have reported high levels of depressive and anxiety symptoms as well as
51 poor sleep quality, and younger people have reported a significantly higher prevalence of
52 generalized anxiety disorder and depression [7, 9, 10, 11, 12, 13, 14, 15]. Furthermore, the
53 restrictive measures are likely to increase the risk of family violence and reduce options for
54 support [16]. Being confined to one's home can lead to tension and violence in couples where

55 there was previously no violence, as well as increase the incidence of violence. In fact, social
56 distancing and the orders to stay at home could lead to an increase in conflicts, disagreements
57 and arguments, due to the increased daily proximity of couples but also by the limitation or
58 absence of access to other social and public spaces (professional, recreational, sports,...) that
59 contribute to the regulation of tensions and to the well-being of people. Moreover, other factors
60 such as economic uncertainty, job loss, and being with children all the time may add to the
61 stress experienced by both women and men, thereby increasing the risk of marital conflict and
62 violence [17]. In addition, confinement may reinforce or facilitate control, surveillance and
63 coercion strategies of perpetrators of intimate partner violence [18, 19]. A number of experts
64 have warned that women would be increasingly exposed to IPV in a lockdown situation. In fact,
65 a rise in reports of domestic abuse, in the number of calls from victims in distress, and demand
66 for support has been noted in many countries, including in Belgium [18, 20].

67 In this way, the COVID-19 pandemic has revealed how IPV remains a major societal and health
68 problem [16, 21]. The risk of IPV was considered and guided public policy. Governments faced
69 with the risk of IPV have encouraged either the violence reporting or the reception of victims
70 during the lockdown. Pharmacies and grocery stores in France and Belgium have been provided
71 emergency warning systems to allow people to indicate that they are in danger and need support
72 through the use of code words to alert staff [22, 23].

73 While research on domestic violence prevention and treatment is ongoing and several sources
74 have speculated on the impact COVID-19 has had on it [16, 21, 24], an increasing number of
75 published peer-reviewed studies are analyzing IPV rates in light of the pandemic [25, 26, 27].
76 The main objective of this study is to assess, based on an online survey, the presence of IPV
77 during the period of confinement, the associated factors related to lockdown and the pandemic
78 and to mental health individual vulnerabilities.

79 **Intimate partner violence**

80 In recent years, intimate partner violence has been recognized as a real social and public health
81 problem and has become a central issue on the European political agenda. IPV includes acts of
82 physical and sexual violence, emotional-psychological abuse, and controlling behaviors toward
83 intimate partners of the same or opposite sex [28, 29, 30, 31, 32]. According to Johnson's
84 typology of IPV, there are two prevalent forms of IPV: intimate terrorism (IT) and situational
85 couple violence (SCV). Intimate terrorism is part of a cyclical dynamic in which the abuser uses
86 a variety of strategies (violent and non-violent) to control and terrorize his partner, including
87 psychological, physical and sexual abuse, as well as intimidation and threats. The perpetrators
88 of this violence (IT) are mostly men, which can be explained by the fact that it is rooted in
89 patriarchy. Situational couple violence represents the violence that emerges when a conflict
90 escalates into violence. While conflict is present in all couples, for some couples, these conflicts
91 increase in frequency and intensity, culminating in the perpetration of violent acts [33, 34]. The
92 different studies have shown that situational couple violence the most represented in general
93 surveys, whereas intimate terrorism and violent resistance dominate in agency samples, and this
94 is a source of difference across studies with respect to the gender symmetry of partner violence
95 [35, 36, 37]. Our study focuses both on forms of physical and psychological violence. Physical
96 violence involves forceful physical contact that may vary from light pushes and slaps to severe
97 beatings and lethal violence [31]. The term psychological aggression refers to acting in an
98 offensive or degrading manner toward another, usually verbally, and may include threats,
99 ridicule, withholding affection, and restrictions (e.g., social isolation, financial control) . One
100 of the most frequent forms of IPV in western societies is psychological. It can occur either in
101 isolation or in conjunction with other forms of IPV and can be bidirectional [32, 38, 39, 40, 41].
102 Several studies and meta-analyses have identified poor mental health, including depression and
103 anxiety, as one of the risk factors for physical and psychological violence and it is associated

104 with victimization and perpetration by both women and men [42, 43, 44, 45, 46]. However, this
105 association may vary by gender and type of IPV [47]. Overall, symptoms of anxiety and
106 depression were recognized as very high during the pandemic containment period [7, 9, 10, 11,
107 12]. Various studies have estimated the effects of the COVID-19 pandemic on mental health
108 and have linked financial stress, food insecurity, fear of infection and increased time spent with
109 a partner to increased stress. Stress, frustration and the lack of control can exacerbate the
110 psychopathological problems associated with IPV, further precipitating violent episodes.
111 Situations that increase stress appear to be one of the important risk factors for victims of partner
112 violence [26, 48, 49].

113 **Intolerance of uncertainty**

114 The Covid 19 pandemic is dominated by significant uncertainties about the virus and how to
115 control it and the variants, more globally in relation to the unpredictability of the future [50]. In
116 this context, distress related to uncertainty is an understandable reaction and even appropriate
117 reaction. However, if the threat and uncertainty becomes pervasive, it can disrupt the
118 psychological and social functioning of the individual [4]. In this regard, intolerance of
119 uncertainty (IU) refers to individual differences in the difficulties of coping with the experience
120 of uncertainty. IU can result in a range of cognitive, emotional, and behavioral responses aimed
121 at avoiding and/or resolving the aversive experience [51, 52]. Thus, the inability to deal with
122 distress arising from uncertain situations can have a detrimental effect on mental health, leading
123 to various psychopathological symptoms, such as anxiety or depression [54, 55]. Very recent
124 research has shown that COVID-19-related IU played a fundamental role in psychopathological
125 symptoms (depression and anxiety) in the population during confinement [56, 57, 9]. IU may
126 also be implicated in maladaptive externalizing behaviors and diagnoses [51]. Distress resulting
127 from elevated UI could, in turn, increase the propensity for aggressive behavior in some
128 individuals [58]. However, few studies have investigated the role of IU in aggressive behavior

129 and violence and none have done so in the highly anxiety-provoking context of a pandemic
130 crisis. Nevertheless, one study has shown the links between IU and anger/aggression [59].
131 Moreover, the risk for the externalizing spectrum of psychopathology related to difficulties in
132 tolerating uncertainty may lead individuals to engage in risky behaviors to alleviate distressing
133 or unpleasant emotions [60]. No studies, to our knowledge, have dealt with IU and IPV.
134 However, with feelings of uncertainty being particularly prevalent during an emerging
135 pandemic, our study will integrate the variable IU in order to evaluate its links with violence
136 between partners. Anxiety and depressive symptoms will be examined in our study as predictors
137 of IPV, and as well as mediator, in particular, intolerance of uncertainty.

138 **Our study**

139 Carried out within during the COVID-19 pandemic, the main purpose of this study is to first
140 assess the association between "proximal factors" related to confinement and IPV within the
141 community: lockdown conditions, such as time spent at home, the living environment, the
142 frequency of social contact through digital media, proximity to contamination, and the
143 intolerance of uncertainty and the mental health (anxiety and depression). Second, the roles
144 intolerance of uncertainty, anxiety and depression have played in the increase of IPV cases
145 during the pandemic crisis will be considered.

146 Finally, as the literature highlights that intolerance of uncertainty could implicate anxiety and
147 depressive disorders [2, 61, 62, 63] and that these mental health problems could be risk factors
148 for violence [42, 43, 44, 45, 46], the present study also proposes to assess the indirect effects of
149 anxiety and depression on the relationship between intolerance of uncertainty and intimate
150 partner violence. Mental health-related variables mediate the predictive effect of IU on IPV
151 (mediation model) differently among men and women (moderated mediation model). Physical
152 assault and psychological aggression will also be considered separately.

153 **2. Methods**

154 **2.1. Participants**

155 1,532 adults (80.8% women, $n=1237$) were recruited from the general population through an
156 online self-report questionnaire. All participants were engaged in a romantic relationship and
157 lived together. They were aged between 18 and 83 years ($M = 35.94$, $SD = 14.84$). 82.6%
158 ($n=1265$) of participants lived in Belgium, 17.4% ($n=266$) in another French-speaking country
159 (mainly France and Canada). More than 80% ($n=1225$) were graduates of higher education.
160 3.8% ($n=58$) were in a same-sex relationship. The duration of the relationships were distributed
161 as follows: 2.1% ($n=32$) less than 6 months, 11.1% ($n=170$) between 6 months and 2 years,
162 35.6% ($n=545$) between 2 and 10 years, 25.5% ($n=391$) between 10 and 20 years, and 25.7%
163 ($n=394$) more than 20 years. 58% ($n=888$) of participants had children, but only 46.7% ($n=715$)
164 were living with children during the lockdown. As of the lockdown, 46.4% ($n=711$) were
165 working from home, 25.1% ($n=384$) were taking time off or were out of work, 14.9% ($n=229$)
166 were working at their workplace, and 13.6% ($n=208$) were students. 23.8% ($n=364$) of the
167 participants had lost some financial income. In the present sample, 12.5% ($n=191$) thought that
168 they had been infected by the coronavirus but had not been tested, less than 1% ($n=10$) had
169 tested positive for the coronavirus, and 86.9% ($n=1331$) reported that they had not been infected
170 by the coronavirus. Also, 19.6% ($n=300$) believed that one person close to them had been
171 infected but not tested, 11.3% ($n=173$) knew one person close to them who had tested positive,
172 and 69.1% ($n=1059$) believed that none have been contaminated. Finally, 6.3% ($n=96$) of the
173 sample had consulted a psychologist during the lockdown.

174 **2.2. Materials and measures**

175 This research consisted of a Web-based electronic survey, including simple random sampling
176 methods of recruitment. Invitations to participate was broadly and non-selectively sent by email

177 to the general population, as well as posted at multiple online places. The experimental protocol
178 complied with the Belgian guidelines for studies involving human beings and was approved by
179 the IRB of the University of Liège. The data collection was conducted in accordance with the
180 Helsinki Declaration. Data were obtained through this online self-report questionnaire
181 distributed one month after the beginning – in other words, just before the end of the lockdown
182 – during the period from April 17 to May 1, 2020. We complied with ethical research standards
183 in providing information about the project and asking for consent to participate in the online
184 survey. All respondents provided informed consent. In order to answer any question or to deal
185 with any inconvenience caused by scales (feelings of discomfort or distress or danger), the
186 researcher's e-mail address was given at the beginning and at end of the questionnaire and a
187 videoconference meeting with a specialized psychologist in the field of domestic violence was
188 offered free of charge.

189 **2.2.1. Sociodemographic data and lockdown conditions.** These data are part of a large
190 database collected during lockdown related to the COVID-19 crisis [9]. It includes the usual
191 sociodemographic data (gender, age, country of residence, educational background and marital
192 status), data on lockdown conditions were collected: children and their presence during this
193 period (dichotomous variables: Yes/No), professional situation during the lockdown (including
194 four categories: student, working from home, usual workplace, no work), time spent at home (a
195 score ranging from 0, working out of home during the day, to 2, at home without work all the
196 day), living environment (a score ranging from one to eight evaluating the surface area of the
197 accommodation as well as the availability of a terrace and a garden) and loss of financial income
198 (dichotomous variable: Yes/no). The frequency of social contact was also assessed through 7
199 items on a 4-points Likert scale from (1 = never; 4 = everyday) evaluating contact with friends,
200 family, colleagues and so on through digital media. A high score indicates a high frequency of
201 social contact through digital media. The primary (oneself) and secondary (a close person)

202 coronavirus contaminations were specified (three modalities: not infected, infected but not
203 tested, tested positive for the coronavirus). On this basis, a score of proximity to contamination
204 was determined, including a gradual score from 0 (neither the person himself, nor a loved one,
205 was infected) to 8 (the person himself and a loved one had tested positive for the coronavirus).
206 A high score indicates a high level of proximity to contamination.

207 **2.2.2. Mental health-related variables.** Anxiety and depression were evaluated by the two
208 subscales of the Hospital Anxiety and Depression scale (HAD) [64]. The HAD is a 14 item
209 scale that proposes seven items related to anxiety (in the present sample, $\alpha=.80$) and seven
210 related to depression (in the present sample, $\alpha=.68$), scoring from 0 to 3. Cut-off points of 8 and
211 11 have been identified [65]. Two items of the Intolerance of Uncertainty Scale (IUS) [52] have
212 been included to evaluate reactions to uncertain situations (in the present sample, $\alpha=.72$),
213 scoring from 1 (not at all corresponding) to 5 (extremely corresponding). An additional item,
214 also scoring from 1 (not at all corresponding) to 5 (extremely corresponding), has been created,
215 namely “*Uncertainty makes me more aggressive with my partner in terms of my words, gestures*
216 *and attitudes*” (named “Uncertainty-related aggression”). Finally, a question evaluating if the
217 person had consulted a psychologist (through a videoconferencing system) during the lockdown
218 (dichotomous: Yes/No) was also included.

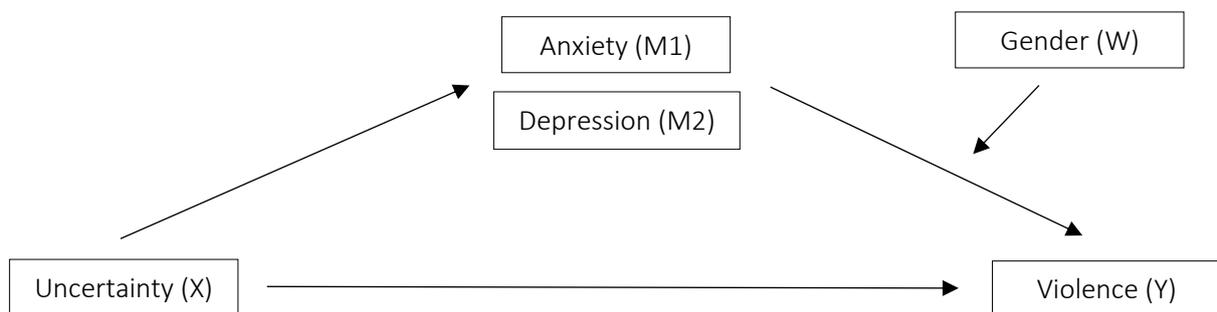
219 **2.2.3. Intimate partner related-variables.** The length of the romantic relationship was
220 assessed through a question with 5 modalities (from less than 6 months to more than 20 years).
221 The higher the score, the longer the relationship. The 20-question short-form Revised Conflict
222 Tactic Scales (CTS2S) [66] was used to measure intimate partner violence. The instruction and
223 quotation were adapted to the context of the lockdown period. Three types of IPV were
224 identified (physical assault, psychological aggression, and sexual coercion) as well as an
225 emotional and psychological negotiation. Only physical assault (e.g., pushing, kicking, beating-
226 sprains and bruises) and psychological aggression (e.g. yelling, arguing, threatening harm and

227 destroying belongings) in the relationship will be considered in the present research
228 (respectively, $\alpha=.73$ and $.63$). An additional question (subjective self-evaluation) on the
229 evolution of violence has been included, with 4 modalities of answer (No violence, decreased
230 violence, continuing violence, increased violence).

231 2.3. Data analysis

232 SPSS 26 software was used to perform the statistical analyses. Descriptive statistics,
233 consistency reliability, Spearman's correlations, Chi-square (with Phi coefficient) and Mann-
234 Whitney U tests were conducted. Statistical significance was set at $p < 0.05$. To test mediation
235 and moderated mediation hypotheses, PROCESS modeling, as outlined by Preacher and Hayes
236 [67], was applied and a bootstrapping method (10 000 bootstrap samples) was used. This method
237 is a nonparametric approach to effect-size estimation and hypothesis testing that is not based
238 on large-sample theory and, therefore, circumvents the power problem associated with
239 asymmetries [68]. When zero is not included in the bootstrap confidence intervals, it is possible
240 to set a significant indirect effect (mediator effect) or conditional effect (moderator effect) –
241 reflected in the Index of moderated mediation [69, 70, 71] – at $p < .05$. Tested models are
242 shown in figure 1.

Figure 1. Moderated mediation models.



Note. Distinct models have been tested: the indirect effect of anxiety (M1) and depression (M2) in the relationship between intolerance of uncertainty (X) and physical (model 1) and psychological (model 2) violence (Y), according to gender (W) (model 3 and model 4).

243 3. Results

244 **3.1. Descriptive statistics and correlations**

245 The first results show prevalence rates concerning intimate partner violence. Among the
 246 subsample of perpetrators of intimate partner violence (33.4% of the total sample, n=511),
 247 84.5% (n=432) are also victims of violence. Among the subsample of victims of intimate
 248 partner violence (28.2% of the total sample, n=432), 100% are also perpetrators. In other words,
 249 among the total sample (n=1532), 28.2% are both perpetrators and victims (n=432), 5.2% are
 250 only perpetrators (n=79), and 0% are only victims. On the basis of these results, future analyses
 251 will not focus on the perpetrators/victims' perspective, but on the form severity and frequency
 252 of violence, especially physical assault and psychological aggression. Considering each item of
 253 the CTS2S separately, the prevalence rates are presented in table 1 for minor (M) and severe
 254 (S) physical assault and psychological aggression.

Table 1. Prevalence for each item of physical assault and psychological aggression subscales.

	Total (n=1532)		Women (n=1238)		Men (n=294)	
	%	N	%	N	%	N
Physical assault						
Victim - Sprain, bruise, or small cut (M)	6.8	104	6.5	81	7.8	23
Perpetrator - Sprain, bruise, or small cut (M)	5.8	88	4.9	62	8.9	26
Perpetrator – To push, shove, or slap (M)	1.8	28	1.9	24	1.4	4
Victim – pushed, shoved, or slapped (M)	2.3	35	1.9	24	3.8	11
Perpetrator – To punch or kick or beat-up (S)	0.3	5	0.2	3	0.7	2
Victim - Punched or kicked or beat-up (S)	0.5	8	0.2	4	1.4	4
Victim – To need to see a doctor (S)	0.4	6	0.3	4	0.7	2
Perpetrator – To send to see a doctor (S)	0.5	8	0.3	4	1.4	4
Psychological aggression						
Perpetrator – To insult or swore or shout or yell (M)	30	460	31.8	394	22.5	66
Victim - Insulted or swore or shouted or yelled (M)	27.5	421	28	347	25.3	74
Perpetrator – To destroyed something (S)	0.9	14	0.9	12	0.7	2
Victim – Have something destroyed (S)	1.1	17	1.0	13	1.4	4

Note. (M)=Minor. (S)=Severe.

255 Second, lockdown-related, mental health and intimate partner variables are considered. Means
 256 and standard deviations for proximity to contamination, living environment, time at home,
 257 social contacts, couple duration, uncertainty-related aggression, anxiety, depression,

258 intolerance of uncertainty, physical assault and psychological aggression, as well as internal
259 consistency and Spearman's correlations between these variables, are shown in Table 2.

Table 2. Spearman's correlations, descriptive statistics and internal consistency

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	M	SD
1. Prox.	1											.93	1.68
2. Envi.	-.02	1										5.57	1.77
3. Home	-.03	-.01	1									1.10	.62
4. Cont.	.10**	.07**	-.05*	1								16.49	3.76
5. Couple	-.06*	.37**	.08**	-.04	1							3.62	1.04
6. Agress.	.04	-.07**	.01	.06*	-.07**	1						2.76	1.25
7. Anx.	.04	-.10**	-.03	.10**	-.16**	.35**	1					6.75	3.85
8. Dep.	.02	-.13**	.10**	-.07**	-.06*	.30**	.52**	1				7.42	3.54
9. Uncert.	-.01	-.14**	.04	.03	-.15**	.49**	.50**	.40**	1			6.62	1.97
10. Phys.	.03	-.05*	.03	.01	-.08**	.20**	.14**	.16**	.15**	1		8.25	1.05
11. Psycho.	.06*	-.09**	.03	.04	-.11**	.34**	.20**	.22**	.16**	.31**	1	4.83	1.44

Note. Prox. = Proximity to contamination. Envi. = Living environment. Home = Time spent at home. Cont. = Social contacts. Couple = couple duration. Agress. = uncertainty-related aggression. Anx. = Anxiety. Dep. = Depression. Uncert. = Intolerance to Uncertainty. Phys. = Physical assault. Psycho. = Psychological aggression. * $p < .05$. ** $p < .001$.

260 Cronbach's alphas are good to high. Physical assault and psychological aggression are
 261 significantly positively related to aggression associated with uncertainty, anxiety, depression,
 262 and intolerance of uncertainty, and significantly negatively associated to living environment
 263 and couple duration. Only psychological aggression is positively associated to proximity of
 264 contamination.

265 3.2. Group comparisons

266 Cross-tables and Chi-square tests were run to identify prevalence rates and assess the gender
 267 differences between physical assault, psychological aggression and increased violence (Table
 268 3). The prevalence of physical assault is significantly higher in men, whereas the prevalence of
 269 psychological aggression is significantly higher in women. Men report significantly more
 270 increased violence during lockdown.

271 As group sizes were unequal and homogeneity of variance is generally not assumed ($p < .001$),
 272 the nonparametric equivalent of the independent samples t-test was conducted to compare
 273 women and men on metric variables of interest (Table 2). Results of the Mann-Whitney U test
 274 are also shown in Table 1. Women are found to be more anxious and more intolerant of
 275 uncertainty. No difference between men and women was found for depression.

Table 3. Prevalence and gender differences of intimate partner violence behaviors.

	Total (n=1532)		Women (n=1238)		Men (n=294)		X ² (df=1)	p	Phi
	%	N	%	N	%	N			
Physical assault	9.2	140	8.4	104	12.3	36	4.27	.03	.05
Psychological aggression	33.8	517	35.2	435	28.0	82	5.49	.01	-.06
Increased violence	3.6	55	2.8	35	6.8	20	19.38	.001	.11
	M	SD	M	SD	M	SD	U	p	
Anxiety	6.75	3.85	6.98	3.85	5.73	3.59	146202	<.001	
Depression	7.42	3.54	7.49	3.58	7.10	3.31	168932	.05	
Uncertainty	6.62	1.97	6.82	1.88	5.75	2.11	129355	<.001	

276 Also, differences between participants living with children during confinement and those who
 277 were not have been assessed through the Mann-Whitney U test. Results demonstrate that both
 278 groups do not differ concerning anxiety (U=301140.00, p=.29), depression (U=294049.00,
 279 p=.81), intolerance of uncertainty (U=279033.50, p=.12), physical (U=290379.50, p=.75) and
 280 psychological (U=303254.00, p=.11) violence. Therefore, this variable will not be included in
 281 the following models.

282 3.3. Mediation Models

283 To test the indirect effect of anxiety (M1) and depression (M2) in the relationship between
 284 intolerance of uncertainty (X) and physical assault (model 1) and psychological aggression
 285 (model 2) (Y), mediation models with multiple mediators were conducted (Model 4 of
 286 PROCESS macro) [70, 71]. As shown in table 4, anxiety and depression significantly mediate
 287 the relationship between intolerance of uncertainty and physical assault and psychological
 288 aggression. Because intolerance of uncertainty no longer affects violence after mediators have
 289 been included, both mediations are complete.

Table 4. Mediation Analyses with Multiple Mediators

Variables		Effect	(boot) SE	t	p	(boot) LLCI	(boot) ULCI
Model 1		DV = Physical Assault					
y = Physical Assault	Total effect of x on y	.06	.01	4.94	<.001	.0403	.0933
x = Uncertainty	Direct effect of x on y	.01	.01	.50	.61	-.0227	.0384
m = All mediators	Indirect effect of x on y	.06	.01			.0298	.0958
m = Anxiety		.03	.01			.0099	.0629
m = Depression		.02	.01			.0104	.0414
Model 2		DV = Psychological Aggression					
y = Psychol Violence	Total effect of x on y	.12	.01	6.45	<.001	.0827	.1548
x = Uncertainty	Direct effect of x on y	.02	.02	.87	.38	-.0228	.0596
m = All mediators	Indirect effect of x on y	.10	.01			.0718	.1312
m = Anxiety		.05	.01			.0308	.0891
m = Depression		.04	.01			.0226	.0602

Note. SE = Standard Error; LLCI = Lower Limit of Confidence Interval; ULCI = Upper Limit of Confidence Interval. Observations with missing values were removed from the analysis.

290 **3.4. Moderated Mediation Models**

291 As a gender difference has been demonstrated for many variables, it has been included in the
292 model. To test the indirect effect of intolerance of uncertainty (IV) on physical assault and
293 psychological aggression (DV) through anxiety and depression (M) moderated by gender (W),
294 moderated mediation (moderator x mediator interaction) models with multiple mediators were
295 conducted (Model 14 of PROCESS macro) [70, 71]. Our results demonstrate that gender does
296 not significantly moderate the mediation models for either model: (model 3) the indirect effect
297 of intolerance of uncertainty to physical assault through anxiety (Index= .01, BootSE=.02,
298 BootLLCI=-.03, BootULCI=.07), the indirect effect of intolerance of uncertainty to physical
299 assault through depression (Index= .01, BootSE=.02, BootLLCI=-.01, BootULCI=.06); (model
300 4) - the indirect effect of intolerance of uncertainty to psychological aggression through anxiety
301 (Index= .01, BootSE=.03, BootLLCI=-.05, BootULCI=.08), the indirect effect of intolerance
302 of uncertainty to psychological aggression through depression (Index= .01, BootSE=.02,
303 BootLLCI=-.04, BootULCI=.05). Therefore, anxiety and depression completely mediate the
304 relationship between intolerance of uncertainty and physical assault and psychological
305 aggression for both men and women.

306 **4. Discussion**

307 As containment measures related to the COVID-19 crisis were announced in March in Europe
308 and Canada, Since then, an increasing number of published peer-reviewed studies are analyzing
309 IPV rates in light of the pandemic [25, 26, 27]. Our study is one of those early studies that
310 evaluate violence between partners during confinement into the community to assesses the
311 association between lockdown conditions and mental health, and that allowing us to identify
312 avenues for intervention and prevention.

313 During the confinement period, 33% of the participants had experienced at least one form of
314 psychological or physical violence within their couples after 4 weeks, without taking sexual
315 violence into account. However the percentage of severe physical and psychological violence
316 cases among participants was very low (victimization of severe physical assault [punched,
317 kicked or beaten by partner] was 0.5% and victimization of severe psychological aggression:
318 2%). These results are not surprising and represent only one facet of violence in couples that
319 do not or only partially cover those targeted in the prevention and emergency assistance
320 measures developed during the COVID-19 pandemic. Indeed, when studying violence in
321 couples, it is important to take into account the type of sample, as different degrees of IPV
322 (Intimate Terrorism and Situational Couple Violence) may be present depending on the type of
323 sample [33]. Our online study conducted during containment allowed for rapid recruitment
324 from the entire population, to include a large amount of variability, which makes it ideal for
325 studying IPV. But the online study of non-clinical samples identified minor violence in couples,
326 and more often reciprocal violence. As a type of selection bias, perpetrators and victims of
327 intimate terrorism-type violence should be less likely to respond to these online surveys as
328 victims should be prohibited from responding and perpetrators should be unlikely to report their
329 own actions. Access to these surveys requires the use of clinical samples distributed in shelters,
330 hospitals or among the police, which was not possible during the period of confinement [36].
331 According to extensive studies, our results reflect that 84.5% of perpetrators were also victims
332 of violence, and among victims of IPV, all were perpetrators. These associations may reflect
333 the use of psychological and physical aggression in the context of situational couple altercations
334 [30, 32]. Our data do not allow us to determine the context, intentions and reactions of the
335 perpetrator and victim partners, and although our results seem to reflect situational violence,
336 some of it may be part of intimate terrorism type violence. Studies based on qualitative

337 approaches using interviews are needed to deeper into the types of violence experienced during
338 periods of confinement and deconfinement Covid 19.

339 It should be noted that women are significantly more involved in psychological assaults, and
340 men in physical assaults. However, men reported that involvement in IPV significantly
341 increased during the lockdown. It is possible that the context of confinement may have
342 increased the amount of time spent at home, increased tensions, conflict and violence for men,
343 but it is also possible that men may have identified and experienced these experiences as
344 violence because of the confinement when it may have appeared trivialized/normalized before.
345 Previous studies have shown that an increase in the intensity and seriousness of violence can
346 lead a victim to become aware of the violence [72, 73]. Our results would suggest that the fact
347 of being confronted with violence for men and being confined at home and in couples without
348 other social living spaces could lead to an identification and awareness of this violence. Also,
349 those in the youngest relationships are likely to experience physical and psychological violence
350 during confinement, as well as to present symptoms of psychological distress (anxiety and
351 depressive symptoms) associated with such violence, and intolerance of uncertainty perceived
352 as generating, among other things, aggressiveness towards the partner (see correlations table
353 2). These findings highlight that young couples are more at risk in terms of physical and
354 psychological violence, finding already highlighted in previous research [74] and psychological
355 distress in confinement [11]. Couples in older relationships may be better able to withstand
356 confinement and provide supportive and safe environments for their partners to cope with stress
357 and uncertainty generated by the pandemic and confinement.

358 This novel situation of confinement during the COVID-19 pandemic has locked families and
359 couples within their homes, thereby increasing the amount of time couples spend together on a
360 daily basis, while decreasing the possibilities for contact and social relations with the outside

361 world. Interestingly, our study shows that work at home or absence from work, therefore being
362 more present at home, is significantly associated with depressive symptoms, but is not
363 correlated with intimate partner violence. In contrast, results reveal that physical and
364 psychological violence is associated with a smaller living spaces that lack a garden or terrace.
365 Since housing is an indicator of a person's socio-economic level, it can be assumed that socially
366 disadvantaged couples have been more affected by confinement. Indeed, a smaller living
367 environment is also associated with the presence of anxiety, depression, intolerance of
368 uncertainty and aggression related to uncertainty (see correlations). Although it is certainly the
369 case that middle class and affluent families also experience cases of domestic violence, studies
370 consistently indicate that as the financial status of a family increases, the likelihood of domestic
371 violence decreases [75, 76]. Couples experiencing financial and family stressors during the
372 pandemic have likely an increase of the number of arguments and conflicts, and of the common
373 couple violence during sustained social isolation and physical proximity, particularly among
374 young and newly formed intimate relationships [17, 26]. Sharma and Borah (2020) consider
375 that the increase of domestic violence during the Covid-19 pandemic is an indirect driver of
376 economic and social crisis [77].

377 The psychological impact of containment and the COVID-19 pandemic crisis on the mental
378 health of the population is now demonstrated, with higher rates of anxiety and depression
379 observed, which are linked to, among other things, IU [7, 11, 12, 78]. Pandemic crises sow
380 uncertainty which can last for a long time; intolerance of uncertainty is a risk factor for the
381 mental health of the population [3, 4]. Furthermore, poor mental health including anxiety and
382 depression is a risk factor for intimate partner violence IPV perpetration and victimization [42,
383 43, 44, 45, 46] among men and women.

384 Recent research suggests that IU may be an important contributor to the anxiety disorders and
385 depression's symptoms. This is the first study to examine whether IU predicts intimate partner
386 violence in the context of confinement, and if mental health (anxiety and depression) could
387 explicate and participate to this relationship. Interestingly, our study demonstrates that
388 intolerance of uncertainty predicts the perpetration and victimization of physical and
389 psychological violence in confined couples, by increasing depressive and anxiety symptoms for
390 both men and women. Individuals who are intolerant of uncertainty are more at risk of feeling
391 anxious or depressed and are therefore more likely to experience IPV. IU alone does not appear
392 to explain by itself the increase in the rates of this type of violence. Rather, it seems to be
393 because individuals experience or are vulnerable to anxiety and depression related to
394 uncertainty that rates of intimate partner physical and psychological violence increase
395 (Complete mediation). This phenomenon would be relevant for both women and men (non-
396 significant moderated mediation). These major findings are a reminder that depression can
397 increase the risk of violence and involvement in verbal conflicts [79]. They also highlight that
398 depression and anxiety for both men and women are real risk factors for physical and
399 psychological violence during the confinement.

400 Our study, conducted in the midst of a pandemic lockdown, incorporated intolerance of
401 uncertainty into models of psychological and physical violence. Deconfinement will give rise
402 to even more uncertainty than the confinement period, as subjects will no longer be required to
403 remain in their homes and the rules on social interaction patterns and risks will be less clear. It
404 is therefore important to incorporate this variable into our psychological models. Our results
405 show, however, that reducing uncertainty will not directly decrease the risk of violence, nor
406 will it directly increase it, but for subjects in whom uncertainty is anxiety-inducing and
407 depressogenic, intolerance of uncertainty may increase and/or lead to violence.

408 These results underscore the importance of paying attention to the mental health of individuals
409 in studies of IPV, especially during periods of confinement and deconfinement, This is
410 especially significant if individuals are suffering from depression as it is a factor of recidivism
411 [80]. Our study has made it possible to highlight the existence of physical and psychological
412 IPV, which can affect both women and men living in intimate relationships. While public
413 policies during confinement have focused on violence against women and on severe violence,
414 our survey highlights the need to also take into account minor violence within couples, and
415 violence perpetrated and suffered by women and men [81]. IPV in times of crisis and the
416 associated mental health factors require a combination of social, medical and legal responses.
417 As informal contacts are the main detection and support system, community-based initiatives
418 and public media should be used to raise awareness of the increased risk of IPV during the
419 pandemic [21, 82]. Governments need to do more to alert the public to additional stressors and
420 communicate about coping strategies [27]. A proactive approach focusing on well-being,
421 hopefulness or self-efficacy can be useful during the Covid-19 period and help reduce the social
422 crisis [77]. Given the impact that pandemic may have on mental health and the highlighted links
423 to partner violence, health professionals need to pay particular attention to the mental stability
424 of their patients, intervening to reduce the exacerbation of co-morbid psychiatric disorders and
425 thus reduce the potential risk of violence [82]. In a time of reaction, developing protocols and
426 training frontline professionals (police officers, psychologists, doctors...) in IPV screening
427 procedures and mental health risk factors in times of crisis could help to better identify people
428 at risk [49, 83].

429 **Strength and limitations**

430 The present research has several strengths, such as the large sample, recruitment across several
431 countries, the diversity and completeness of studied variables, and the solidity and relevance of
432 tested statistical models. This is one of the first studies to evaluate intimate partner violence,

433 including variables associated with confinement conditions, depression, anxiety and intolerance
434 to uncertainty, and highlighting an innovative model. The first limit is that women are
435 overrepresented. Gender has been taken into account in all analyses to neutralize this problem.
436 Also, we use a non-validated 2-items version of the IU scale. Another limit is that, as mentioned
437 by Kaukinen [17], the samples from self-report data may not include all women who are victims
438 of the most severe types of IPV or those who are victims of COVID-19 disease. Finally, our
439 study evaluated psychological and physical violence on the basis of CTS2, what does not
440 measure the consequences or the causes of the assault (such as the desire to dominate), or
441 dynamics of violence. Although the CTS2 could be criticized for being reductionist in its sole
442 focus on the presence of an act, and ignoring the context in which the act took place, it does
443 afford measurement of the form, severity and frequency of different acts in our study “during
444 lockdown” [84]. However, futures researches need for careful joint analyses of self-report
445 survey data, estimates from law enforcement agencies, and clinical data during and after
446 COVID-19. This will allow to tap diverse types of intimate partner abuse and also explore the
447 way in which COVID-19 disease progression may place women and men at further risk for
448 physical violence, emotional and financial abuse, and coercive control [17]. Subsamples should
449 also be required from vulnerable/precarious populations such as those in shelters, hospitals and
450 from the police, namely population with little access to online surveys. Future research is
451 needed to highlight the intimate partner violence process in at-risk populations, especially
452 mental health-related and crisis associated risks to develop intervention and assistance
453 strategies during crisis and post-crisis periods, such as the one we are experiencing with
454 COVID19.

455 **6. Conclusion**

456 During the COVID-19 epidemic, people faced a sense of uncertainty that affected levels of
457 anxiety and depression, and the risk of IPV. First, clear and consistent information regarding

458 the disease and management plan should be provided to everyone so as to avoid panic,
459 confusion and to reduce uncertainty [85]. Secondly, there is a need for programs to prevent IPV
460 of varying severity, among youth, men and women, and especially among those who are
461 psychologically fragile in the context of the uncertainty caused by the pandemic, and
462 particularly for socially and psychologically vulnerable people. In addition, It is important to
463 strengthen psychological first aid that is a crucial early intervention that focuses on mental
464 health of the population by providing psychosocial support during outbreaks like COVID-19
465 [85, 86]. It is also necessary to make all front-line medical and psychological professionals
466 aware of the existence of risk of IPV so that they integrate it into their assessment and
467 interventions with patients. These early intervention could offer help to both victims and
468 perpetrators and stop the escalation and/or installation of more severe IPV. Finally, it seems
469 appropriate to continue these interventions after confinement because the uncertainties that the
470 population will face could increase.

471 **Conflict of interest**

472 Authors declare that they have no conflict of interest.

473 **Abbreviations**

474 **Agress:** uncertainty-related aggression

475 **Anx:** Anxiety.

476 **Cont:** Social contacts

477 **Couple:** couple duration

478 **CTS2S or CTS2:** Short-form Revised Conflict Tactic Scales

479 **Dep:** Depression.

480 **Envi:** Living environment

481 **HAD:** Hospital Anxiety and Depression scale

482 **Home:** Time spent at home

483 **M:** Minor

484 **M(1,2):** Mediator

485 **IPV:** Intimate Partner Violence

486 **IRB:** Institutional Review Board

487 **IT:** intimate terrorism

488 **IU or Uncert:** intolerance of uncertainty

489 **IUS:** Intolerance of Uncertainty Scale

490 **LLCI:** Lower Limit of Confidence Interval

491 **Phys:** Physical assault

492 **Prox:** Proximity to contamination

493 **Psycho:** Psychological aggression

494 **S:** Severe

495 **SCV:** situational couple violence

496 **SE:** Standard Error

497 **SPSS:** Statistical Package for the Social Sciences

498 **ULCI:** Upper Limit of Confidence Interval

499 **W:** Moderation

500 **WHO:** World Health Organization

501 **X or IV:** Independent Variable

502 **Y or DV:** Dependent Variable

503 **7. Declarations**

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506 **Authors' contributions**

507 FG designed the research and the study protocol. ES organized the database, analyzed the
508 data, FG wrote the draft of manuscript. FG, ES and AD contributed to and approved the
509 manuscript.

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513 The datasets used and/or analysed during the current study are available from the
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515 **Ethics approval and consent to participate**

516 The methodology has been approved by the IRB of the University of Liège, the Ethics
517 Committee Faculty of Psychology. All participants provided written informed consent.

518 **Consent for publication**

519 Not applicable.

520 **Competing interests**

521 The authors declare that they have no competing interests.

522 **Author Details.**

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Figures

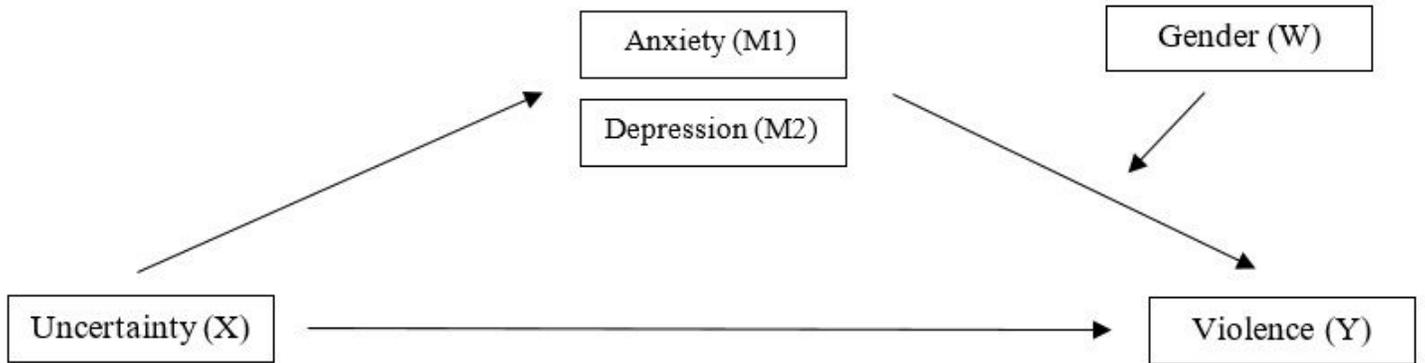


Figure 1

Moderated mediation models. Note. Distinct models have been tested: the indirect effect of anxiety (M1) and depression (M2) in the relationship between intolerance of uncertainty (X) and physical (model 1) and psychological (model 2) violence (Y), according to gender (W) (model 3 and model 4).