



ALMA MATER STUDIORUM  
UNIVERSITÀ DI BOLOGNA

ARCHIVIO ISTITUZIONALE  
DELLA RICERCA

## Alma Mater Studiorum Università di Bologna Archivio istituzionale della ricerca

Perceived Emotional Impact of COVID-19 and Depressive Symptoms among Male Same-Sex Chilean Couples:  
Direct and Indirect Dyadic Associations through Relationship Satisfaction

This is the final peer-reviewed author's accepted manuscript (postprint) of the following publication:

*Published Version:*

Guzmán-González, M., Barrientos, J., Garrido, L., Bahamondes, J., Gómez, F., Espinoza-Tapia, R., et al. (2023). Perceived Emotional Impact of COVID-19 and Depressive Symptoms among Male Same-Sex Chilean Couples: Direct and Indirect Dyadic Associations through Relationship Satisfaction. *JOURNAL OF SEX & MARITAL THERAPY*, 49(3), 259-269 [10.1080/0092623X.2022.2098214].

*Availability:*

This version is available at: <https://hdl.handle.net/11585/900120> since: 2024-06-24

*Published:*

DOI: <http://doi.org/10.1080/0092623X.2022.2098214>

*Terms of use:*

Some rights reserved. The terms and conditions for the reuse of this version of the manuscript are specified in the publishing policy. For all terms of use and more information see the publisher's website.

This item was downloaded from IRIS Università di Bologna (<https://cris.unibo.it/>).  
When citing, please refer to the published version.

(Article begins on next page)

**AUTHOR POST-PRINT VERSION**

<https://doi.org/10.1080/0092623X.2022.2098214>

**Perceived Emotional Impact of COVID-19 and Depressive Symptoms among Male Same-Sex Chilean Couples: Direct and Indirect Dyadic Associations through Relationship Satisfaction**

Mónica Guzmán-González<sup>a</sup>, Jaime Barrientos<sup>b\*</sup>, Lusmenia Garrido<sup>c</sup>, Joaquín Bahamondes<sup>a</sup>, Fabiola Gómez<sup>d</sup>, Ricardo Espinoza-Tapia<sup>a</sup>, and Giulia Casu<sup>e</sup>

<sup>a</sup> Escuela de Psicología, Universidad Católica del Norte, Antofagasta, Chile;

<sup>b</sup> Facultad de Psicología, Universidad Alberto Hurtado, Santiago, Chile;

<sup>c</sup> Departamento de Psicología, Universidad Católica del Maule, Talca, Chile;

<sup>d</sup> Escuela de Psicología, Pontificia Universidad Católica de Chile, Santiago, Chile;

<sup>e</sup> Department of Psychology, University of Bologna, Bologna, Italy

\* Corresponding author. E-mail: [jbarrientos@uahurtado.cl](mailto:jbarrientos@uahurtado.cl); Address: Psychology Faculty, Universidad Alberto Hurtado, Almirante Barroso 10, Santiago, Chile.

**Abstract**

Stressors arising from the COVID-19 pandemic can spill over into the quality of couple relationships, with negative consequences on mental health. The mental health impact of COVID-19 might be particularly pronounced in disadvantaged populations such as LGBT people. This study aimed to examine direct and indirect dyadic associations between emotional impact of COVID-19 and depressive symptoms through relationship satisfaction in male same-sex couples. Using a cross-sectional design, 158 male same-sex Chilean couples completed self-report measures of the emotional impact of COVID-19, relationship satisfaction and depressive symptoms. We used the actor-partner interdependence mediation model for indistinguishable dyads to explore the direct and indirect dyadic associations. Results indicated that each partner's perceived emotional impact of COVID-19 was associated with his own higher depressive symptoms directly and indirectly, through his own lower relationship satisfaction. The other partner's perceived emotional impact of COVID-19 was associated with one's own higher depressive symptoms only directly. Our findings reinforce the notion that satisfactory couple relationships can act as a protective factor against depression in the LGBT population. Programs to promote adaptive coping strategies to deal with the emotional impact of the COVID-19 pandemic may have beneficial effects for the emotional adjustment of male same-sex couples, also by promoting relationship satisfaction.

**Introduction**

The COVID-19 pandemic has led to changes in people's daily lives. The psychological effects of these changes need to be further studied considering evidence that the levels of depression have increased (Bueno-Notivol et al., 2021; Luo, Guo, Yu, Jiang, & Wang, 2020).

Mental health impact of COVID-19 is expected to be more noticeable among gay, lesbians, bisexual and transgender (LGBT people (Phillips et al., 2020) who are in a situation of greater vulnerability given the prevailing stigma against their sexual orientation or sexual identity (Meyer, 2003). The stressors associated with this disadvantaged position, coupled with those arising from the pandemic, might especially affect the mental health of this group. A cross-national study of LGBT individuals showed that those who felt more emotionally affected by the pandemic reported more depressive symptoms, and these effects were more pronounced in Chile than in European countries (Gato et al., 2021). Although the rights of LGBT people in Chile have improved, considering the approval of anti-discrimination and same-sex marriage laws (Barrientos, 2016), prejudice and violence against this group persist (Barrientos, Ramírez, & González, 2022).

Gay and bisexual men experience higher rates of depression than heterosexual men (King et al., 2008; Ross et al., 2018) and lesbian women (Bahamondes, 2016). Hence, exploring the consequences of the pandemic in this group is of relevance to public health.

It is well established that individual or contextual stressors can spill over into the quality of one's relationship (Randall & Bodenmann, 2017). In the context of COVID-19, Pietromonaco and Overall (2020) proposed a model that describes how pandemic stressors contribute to dyadic relational process (e.g., less support) that threaten the quality of couples' relationships. This can be exacerbated by preexisting vulnerabilities, such as sexual minority status.

When investigating the associations of emotional impact of COVID-19 with depressive symptoms in couples, one variable worthy of consideration as a potential mediator is relationship satisfaction. Relationship satisfaction, defined as an individual's subjective evaluation of their relationship (Hendrick, 1998) is a strong predictor of mental health (Pietromonaco & Collins, 2017). Consistent with Pietromonaco and Overall's model (2020) COVID-19-related stress was associated with lower relationship quality among individuals in different and same-sex relationships (Balzarini et al., 2020; Li & Samp, 2021).

In turn, low relationship satisfaction can be an antecedent of depression, as suggested by the Marital Discord Model of Depression (Beach, Sandeen, O'Leary, & Barlow, 1990), and demonstrated in cross-sectional and longitudinal studies (Goldfarb & Trudel, 2019). As for individuals in a same-sex relationship, lower relationship satisfaction was associated with higher depression in gay and bisexual

men (Sommantico & Parrello, 2021), and the impacts of the pandemic were associated with lower relationship satisfaction and higher depression (Li & Samp 2021).

Based on the above, we argue that a mechanism through which the emotional impact of COVID-19 can lead to depressive symptoms involves relationship (dis)satisfaction. Therefore, this study aims to investigate the role of relationship satisfaction in the link between perceived emotional impact of COVID-19 and depressive symptoms in male same-sex Chilean couples, from a dyadic perspective.

### **A dyadic Perspective**

Adopting a dyadic perspective allows to consider the interdependence that exists among couple members. The Actor-Partner Interdependence Model (APIM; Kenny, Kashy, & Cook, 2006), allows to estimate the associations of an independent variable for each person with their own (i.e., actor effect) and their partner's (i.e., partner effect) outcome variables (Kenny et al., 2006).

Previous dyadic research, although limited to heterosexual couples, reported actor and partner effects of fear of COVID-19 and marital satisfaction on depression (Ahorsu et al., 2020; Dekel et al., 2014; Maroufizadeh, Hosseini, Foroushani, Omani-Samani, & Amini, 2018). Regarding the links between the impact of COVID-19 and relationship satisfaction, a study reported that, for both members, external stress at the beginning of the lockdown was associated with their own greater stress inside the relationship, which in turn was associated with their own and their partners' lower relationship satisfaction after the lockdown (Turliuc & Candel, 2021).

Using an extension of the APIM that incorporates mediator variables, we explored the associations of emotional impact of COVID-19 as perceived by each partner in male same-sex couples with both his own and his partner's depressive symptoms via his own and his partner's relationship satisfaction. Based on theoretical and empirical evidence, we anticipated: (i) a direct association between each partner's higher perceived emotional impact of COVID-19 and both his own and his partner's higher depressive symptoms; and (ii) an indirect actor-level association between each partner's perceived emotional impact of COVID-19 and his own depressive symptoms, such that partners' higher perceived emotional impact of COVID-19 would be associated with their own lower relationship satisfaction, and thus with their own higher depressive symptoms.

## **Methods**

### ***Participants, instruments and procedure***

The recruitment process was carried out through a non-probabilistic sampling by quotas according to age. Inclusion criteria were both partners being male, aged 18 or

older, in a committed same-sex relationship, having been together for at least six months, and both partners being willing to participate. The recruitment process was carried out through various strategies, such as the snowball technique, dissemination in organizations of sexual diversity, advertisements on social networks. Data were collected during lockdown in 2020, where strict restrictions were in place in Chile, a period in which people were confined to their homes, enclosed with the people they cohabited. Data were collected using the Survey Monkey platform. Before starting the survey, participants had to read and approve an informed consent form which described the objectives of the study and assured confidentiality and anonymity. Participants were instructed to complete the survey individually, and to not discuss the questions or answers with their partner. The study was approved by the University Ethics Board. Of the 161 couples who completed the survey, 3 (1.8%) returned incomplete questionnaires or inconsistent answers. The final sample included 158 male same-sex couples.

### ***Measures***

#### ***Sociodemographics***

The survey included demographic variables: age, education (i.e., up to secondary or completed technical or university education), job status (i.e., employed or unemployed), sexual orientation (i.e., gay or bisexual), parental status (i.e., having children or not), relationship length, cohabitation status (i.e., cohabiting with the partner or not), and union status (i.e., being in a civil union with the partner or not).

#### ***Perceived emotional impact of COVID-19***

It was assessed with a single item developed for this study (“To what extent has the COVID-19 pandemic affected you emotionally since it started?”). The item was rated on a 10-point scale (1 = “not emotionally affected at all” to 10 = “very emotionally affected”), with higher scores indicating greater perceived emotional impact of the COVID-19 pandemic.

#### ***Relationship satisfaction***

We used the Chilean version (Rivera, Cruz, & Muñoz, 2011) of the Relationship Assessment Scale (RAS; Hendrick, 1998). This one-factor measure includes seven items (e.g., “How often does your partner meet your needs?”) assessing an individual’s general subjective assessment of positive and negative aspects of their partner and their relationship. Items are rated on a 5-point scale (1 = “low” to 5 = “high”). Total scores can range from 7 to 35, with higher scores indicating higher relationship satisfaction. In previous research, the Chilean RAS showed adequate reliability and expected negative associations with measures of attachment insecurity, fear of intimacy, and depression (Guzmán-González et al., 2020; Rivera et al., 2011). Reliability in this study was  $\alpha = .84$ .

#### ***Depression***

We used the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) Chilean version (Gempp, Avendaño, & Muñoz, 2004). It includes 20 items (e.g., “I thought my life had been a failure”) asking for the frequency of the corresponding symptom during the previous week, rated on a 4-point scale ranging from 0 = rarely or never (1 day or less) to 3 = most of the time (5 to 7 days). Total scores range from 0 to 60, with higher scores indicating higher levels of depression. The Chilean CES-D showed adequate reliability, with Cronbach’s  $\alpha$  coefficients above .80, and evidence of validity based on internal structure and relationship to measures of difficulties in emotion regulation (Garrido-Rojas, Guzmán-González, Mendoza-Llanos, Rivera-Ottenberger, & Contreras-Garay, 2021; Gempp et al., 2004). In this study, reliability was  $\alpha = .90$ .

### ***Statistical analyses***

Analyses were conducted in three steps. First, we preliminarily examined associations between study variables at the individual and couple levels. At the individual level, we calculated associations between different variables within partners (i.e., overall within-partner correlations). For couple-level associations, because partners in same-sex dyads are not distinguishable based on their sex or any other meaningful variable and their designation as Partner 1 or Partner 2 is arbitrary, we adopted a pairwise approach (Gonzalez & Griffin, 1997; Kenny et al., 2006). Following Gonzalez and Griffin (1997) we computed pairwise intraclass correlations (ICCs) for associations between both partners’ reports of the same variables to test for interdependence within dyads, and cross-ICCs for associations between different variables between partners. To test for the statistical significance of all correlations, a  $z$  statistic was computed to adjust for interdependence (Gonzalez & Griffin, 1997). To select couple-level covariates to be included in the dyadic model, Pearson’s correlations and ANOVA were used. Based on previous studies of men in same-sex couples that observed the effects of relationship length and age discordance between partners on relationship quality and/or depression (e.g., Hidalgo et al., 2018; Sommantico & Parrello, 2021), we included relationship length and within-couple age difference as covariates. Scores in relationship satisfaction and depressive symptoms also were compared (ANOVA) across groups based on the following couple-level variables: education (coded as both partners having lower education vs. at least one partner having higher education), job status (coded as both partners being unemployed vs. at least one partner being employed), sexual orientation concordance (coded as partners sharing the same sexual orientation vs. partners having different sexual orientations), parental status (coded as both partners with no children vs. at least one partner having children), cohabitation status, and union status. Variables that were significantly associated with the mediator or outcome were included as covariates.

In the second step, the proposed dyadic mediation model was estimated using the Actor-Partner Interdependence Mediation Model (APIMeM; Ledermann, Macho, & Kenny, 2011) for indistinguishable dyads within a structural equation modeling framework (Olsen & Kenny, 2006). Indistinguishability of dyad members in same-sex couples entails that both partners have a common mean and variance on the independent variable and a common intercept and residual variance on the mediator and outcome variables, in addition to equal actor and partner effects (Olsen & Kenny, 2006). Therefore, we constrained these model parameters to be equal across partners (Olsen & Kenny, 2006; Peugh, DiLillo, & Panuzio, 2013). To remove arbitrary misfit due to arbitrary designation of dyad members as Partner 1 or Partner 2 (Woody & Sadler, 2005), we followed the steps outlined by Peugh et al. (2013): we estimated null (i.e., all covariances fixed to zero), saturated (i.e., all covariances freely estimated), and analysis models (i.e., hypothesized associations freely estimated), and then computed adjusted model fit indexes for the analysis model. To evaluate model fit, we considered the  $\chi^2$ , with  $p > .05$  indicating adequate fit, the root mean square error of approximation (RMSEA; cut-off  $< .06$ ), and the comparative fit index (CFI) and the Tucker Lewis index (TLI) (cut-off  $\geq .95$ ) (Hu & Bentler, 1999). Indirect associations were estimated and tested using bootstrapping with bias-corrected 95% confidence intervals (CIs) based on 5,000 resamples (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2008).

Lastly, due to the correlational nature of the data, a plausible alternative reverse mediation model was estimated, in which depression acted as the mediator between emotional impact of COVID-19 and relationship satisfaction. To determine whether our proposed model described the relationships between the study variables better than the alternative model, we considered changes in CFI ( $\Delta$ CFI) and RMSEA ( $\Delta$ RMSEA). A  $\Delta$ CFI of  $\geq .010$  and a  $\Delta$ RMSEA of  $\geq .015$  in the alternative model compared to the proposed model were considered as indicators of a significant worsen in model fit in the alternative model (Chen, 2007).

A power analysis indicated that, with seven independent variables (i.e., four predictor variables and three covariates) and an  $\alpha$  level of .05 (two-tailed), a minimum of 151 couples was needed to reach enough power (.80) to detect a small-to-medium effect size ( $f^2 = .10$ ). Interpretation of results was based on both statistical significance ( $p \leq .05$  and bias-corrected bootstrapped 95% CIs not including zero for indirect effects) and measures of effect size, with ICCs and Pearson's  $r$  of .10 interpreted as small, .30 medium, and .50 large, and Cohen's  $d$  of .20 interpreted as small, .50 medium, and 0.80 large (Cohen, 1988). Power analysis was conducted using G\*Power 3.1 (Faul, Erdfelder, Lang, & Buchner, 2007). APIMeMs were estimated using maximum likelihood in Mplus 7.2. All other analyses were performed with IBM SPSS 25.

## Results

The 316 partners ranged from 18 to 76 years ( $M = 31.73$ ,  $SD = 9.69$ ), 60.76% ( $n = 192$ ) had higher (technical or university) education, and 69.62% ( $n = 220$ ) were employed. Ninety-one percent of participants ( $n = 289$ ) identified as gay, and 8.54% ( $n = 27$ ) as bisexual. Only 3.80% ( $n = 12$ ) had children from previous relationships. For the 158 couples, 74.05% of couples, one or both partners were highly educated, and in 83.54% one or both partners were employed. In 87.97% of couples both partners shared the same sexual orientation, and in 93.04% neither partner had children. Relationship length ranged from 6 months to 37 years ( $M = 4.73$ ,  $SD = 5.65$ ), and 70.89% of couples had been together for 1 to 4 years. Most couples (62.03%) were cohabiting, and 13.27% of these were in a civil union.

### *Preliminary analyses*

As displayed in Table 1, pairwise ICCs were all significant, indicating interdependence. Emotional impact of COVID-19, relationship satisfaction and depressive symptoms were positively associated within dyads, with small, large, and moderate effects size, respectively. Overall, within-partner correlations and cross-ICCs indicated that emotional impact of COVID-19 and relationship satisfaction were positively and negatively, respectively, significantly associated with depressive symptoms, with small to large effect sizes. The negative correlation between emotional impact of COVID-19 and relationship satisfaction was significant and moderate only at the individual within-partner level.

Relationship length was significantly, negatively correlated with depression scores, with a small effect size. Sexual orientation concordance and job status were significantly associated with depression (Table 1). Individuals from couples in which both partners shared the same sexual orientation ( $n = 278$ ,  $M = 15.68$ ,  $SD = 9.82$ ) reported significantly, slightly lower depressive symptoms than individuals from couples in which partners had different sexual orientations ( $n = 38$ ,  $M = 19.24$ ,  $SD = 11.29$ ,  $d = .36$ ). Individuals from couples in which both partners were unemployed ( $n = 52$ ,  $M = 20.00$ ,  $SD = 10.76$ ) reported significantly, moderately higher depressive symptoms than individuals from couples in which at least one partner was employed ( $n = 264$ ,  $M = 15.34$ ,  $SD = 9.75$ ,  $d = .47$ ). Relationship length, sexual orientation concordance and job status were thus included in the APIMeM as covariates. Paths from couple-level covariates to each partner's outcome were constrained to be equal (Olsen & Kenny, 2006).

**Table 1.** Within- and between-partner correlations, covariate testing, and descriptive statistics.



	<b>Emotional impact of COVID-19</b>	<b>Relationship satisfaction</b>	<b>Depressive symptoms</b>
Emotional impact COVID-19 Bp	<b>.19*</b>		
Relationship satisfaction Wp	-.24**		
Relationship satisfaction Bp	-.10	<b>.51**</b>	
Depressive symptoms Wp	.52**	-.33**	
Depressive symptoms Bp	.21**	-.13*	<b>.32**</b>
<b>Covariates</b>			
Relationship length		.08	-.21**
Age difference between partners		-.11	-.10
Education <sup>a</sup>		.47	1.22
Job status <sup>b</sup>		3.09	4.39*
Sexual orientation concordance <sup>c</sup>		.22	4.23*
Parental status <sup>d</sup>		1.36	.07
Cohabitation status <sup>e</sup>		.35	.93
Union status <sup>f</sup>		.81	.02
<i>M (SD)</i>	5.94 (2.18)	31.04 (3.61)	16.10 (10.06)

*Note.* Wp = within-partner correlations; Bp = between-partner correlations. pairwise ICCs are in bold. Statistical significance of pairwise ICCs, overall within-partner correlations and cross-ICCs was calculated using *z* scores.

<sup>a</sup> one hundred seventeen couples in which at least one partner had higher (technical or university) education, 41 couples in which both partners had lower (up to secondary) education.

<sup>b</sup> one hundred thirty-two couples in which at least one partner was employed, 26 couples in which both partners were unemployed.

<sup>c</sup> one hundred thirty-nine couples in which both partners shared the same sexual orientation (i.e., gay or bisexual), 19 couples in which partners differed in their sexual orientation.

<sup>d</sup> eleven couples in which at least one partner had children, 147 couples with no children.

<sup>e</sup> ninety-eight couples cohabiting, 60 couples not cohabiting.

<sup>f</sup> thirteen couples in a civil union, 145 couples not in a civil union.

\**p* ≤ .05. \*\**p* ≤ .001.

### ***Daydic mediation model (APIMeM)***

Fit measures adjusted for indistinguishable dyad members indicated excellent model fit,  $\chi^2_3 = 3.215$ , *p* = .360, RMSEA = .021, CFI = .999, TLI = .993. For each partner, higher levels of perceived emotional impact of COVID-19 were directly associated with both his own and his partner's higher depressive symptoms (*p* < .001). The actor-level positive association of perceived emotional impact of COVID-19 with depressive symptoms was also indirect, via individual relationship satisfaction (Table 2). Each partner's higher perceived emotional impact of COVID-19 was

associated with his own lower relationship satisfaction, and thus with his own higher depressive symptoms. One partner's relationship satisfaction was unrelated to emotional impact of COVID-19 and depressive symptoms reported by the other partner. Path estimates are shown in Figure 1.

### ***Reverse mediation model***

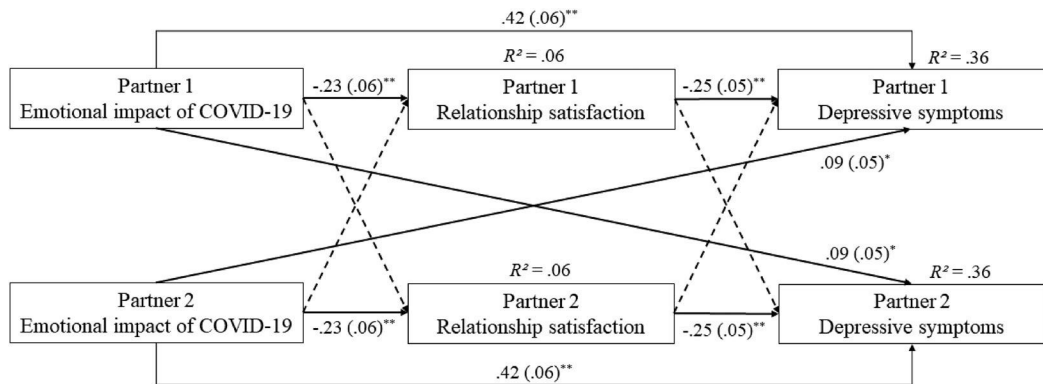
Covariates included in the original model were also controlled for in the alternative model including depressive symptoms as the mediator in the association between emotional impact of COVID-19 and relationship satisfaction. There were significant reverse mediation effects of each partner's emotional impact of COVID-19 on his own relationship satisfaction via his own depressive symptoms ( $b = -.129$ ,  $SE = .031$ , 95% CI [-.196, -.073]), and of one's partner's emotional impact of COVID-19 on one's own relationship satisfaction via one's own depressive symptoms ( $b = -.025$ ,  $SE = .014$ , 95% CI [-.062, -.003]). Emotional impact of COVID-19 was not directly associated with individual ( $b = -.090$ ,  $SE = .063$ ,  $p = .153$ ) or partner ( $b = -.021$ ,  $SE = .055$ ,  $p = .706$ ) relationship satisfaction.

The fit of this alternative model, adjusted for dyad members' indistinguishability, hovered around acceptable levels,  $\chi^2_3 = 5.311$ ,  $p = .149$ , RMSEA = .070, CFI = .989, TLI = .925, yet it was worse than that of the original model. Both decrease in CFI ( $\Delta CFI = .010$ ) and increase in RMSEA ( $\Delta RMSEA = .049$ ) exceeded recommended thresholds, suggesting that our proposed model was a better representation of the data and was to be preferred.

**Table 2.** Total and indirect effects in the APIMeM.

	<i>b</i>	<i>SE</i>	95% CI
Own perceived emotional impact of COVID-19 → Own depressive symptoms			
Total effect EIC-19 <sub>A</sub> → DEP <sub>A</sub>	.475	.052	[.368, .573]
Total IE EIC-19 <sub>A</sub> → DEP <sub>A</sub>	.053	.018	[.023, .095]
Specific IE EIC-19 <sub>A</sub> → RS <sub>A</sub> → DEP <sub>A</sub>	.057	.018	[.026, .101]
Specific IE EIC-19 <sub>A</sub> → RS <sub>P</sub> → DEP <sub>A</sub>	-.003	.005	[-.021, .002]
Partner's perceived emotional impact of COVID-19 → Own depressive symptoms			
Total IE EIC-19 <sub>P</sub> → DEP <sub>A</sub>	.093	.046	[.005, .183]
Total IE EIC-19 <sub>P</sub> → DEP <sub>A</sub>	.002	.018	[-.034, .037]
Specific IE EIC-19 <sub>P</sub> → RS <sub>A</sub> → DEP <sub>A</sub>	.015	.015	[-.010, .051]
Specific IE EIC-19 <sub>P</sub> → RS <sub>P</sub> → DEP <sub>A</sub>	-.013	.011	[-.038, .007]

*Note.* Subscripts A and P indicate actors and partners, respectively. EIC-19 = emotional impact of COVID-19; RS = relationship satisfaction; DEP = depressive symptoms; IE = indirect effect;  $b$  = standardized estimate;  $SE$  = standard error; CI = confidence interval.



**Figure 1.** Dyadic associations between emotional impact of COVID-19, relationship satisfaction, and depressive symptoms.

*Note.* Standardized path estimates (standard errors) are reported. Dashed lines indicate nonsignificant paths. Covariates and between-partner correlations are omitted from the figure for clarity.

\* $p \leq .05$ ; \*\* $p \leq .001$ .

### Discussion/Conclusions

To the best of our knowledge, this is the first dyadic study to investigate whether and how the emotional impact of COVID-19 may directly and indirectly affect depressive symptoms in male same-sex couples. Findings indicated that the emotional impact of COVID-19 had direct actor and partner associations with depressive symptoms, and an indirect actor-level effect through individual relationship satisfaction. Our first hypothesis on direct associations was supported, as we found that a higher perceived emotional impact of COVID-19 in either partner was associated with more symptoms of depression in both themselves and their partner. This is consistent with previous evidence of the effects of COVID-related stressors on depression (Chua, Siau, Fitriana, Low, & Khan, 2021; Gato et al., 2021). Our second hypothesis on indirect associations was also supported. We found that partners' perceptions of higher emotional impact of COVID-19 were associated with their own lower relationship satisfaction, and thus, with higher levels of their own depressive symptomatology. This finding is coherent with previous studies reporting an association between COVID-19 impact and relationship satisfaction (e.g., Balzarini et al., 2020; Li & Samp, 2021), as well as between relationship satisfaction and depression (e.g., Li & Samp, 2021; Sommantico & Parrello, 2021). It is possible that negative emotions associated with the pandemic could undermine partner's satisfaction by increasing relational turbulence, less responsive support, or greater couples' conflicts. In summary, our results complement the conceptual model by Pietromonaco and Overall, for couples (2020), showing that perceived COVID-19-related-stress may lead to enhanced individual depression via relational variables.

If similar results extend to heterosexual couples is a remaining question, especially in light of recent evidence showing positive intraindividual changes in couple satisfaction during the lockdown, particularly an increase in partners' effectiveness for resolving couple conflicts and a decrease in partners' aggressiveness (Galdiolo et al., 2022). The authors also reported that partners had also perceived the influence of the lockdown on couple and family functioning as increasingly positive over time. A possible explanation for these contrasting results as compared to those reported in the present study with same-sex male couples, is that the pandemic might constitute a threat to couples' relationship quality mainly in the short-term, as it was proposed by Luetke, Hensel, Herbenick, and Rosenberg (2020). In that sense, longitudinal studies are needed in order to clarify this question. It is also possible that in the case of same-sex male couples, stressors arising from the pandemic can be exacerbated by preexisting contextual vulnerabilities, such as sexual minority status.

The present study is not without limitations. First, due to its correlational design, we cannot establish the temporal ordering of our study variables. Because longitudinal studies suggest a bidirectional link between relationship functioning and depressive (Davila, Karney, Hall, & Bradbury, 2003; Villeneuve et al., 2014), we tested an alternative reverse mediation model in which depression was the mediator between emotional impact of COVID-19 and relationship satisfaction. Although there were significant reverse mediation effects our proposed model fitted the data better than the alternative model, indicating that our choice to consider relationship satisfaction as a mediator between emotional impact of COVID-19 and depressive symptomatology optimally characterized the relationships between study variables. Second, perceived emotional impact of COVID-19 was measured using a single item. Validated measures of perceived impact of COVID-19 outbreak (e.g., Bernardo et al., 2020; Kira et al., 2020) were not available at the time of this study, although our single item is very similar to items used in recent studies (Gato et al., 2021). Third, we did not control for other pandemic-related stressors, such as financial strain, or variables related to minority stressors, which have been associated with both relationship satisfaction and depression in dyadic studies (Li & Samp, 2021). Finally, partners in this study were mostly highly educated and employed, most couples had been together for 1 to 4 years, only a few were in a civil union, and only in a small portion of couples the two dyad members did not share the same sexual orientation.

Despite these limitations, this study represents a first step toward understanding the dyadic effects of COVID-19-related stress on the mental health of couples from LGBT groups, and expands current knowledge of how the quality of same-sex couple relationships is linked to mental health. This is especially relevant as couple-

based studies in the LGBT population are scarce and practically nonexistent in Latin America and Chile.

In terms of practical implications, interventions to promote adaptive coping strategies to deal with stressors from outside the relationship, such as the COVID pandemic, may have beneficial effects for the emotional adjustment of both members of male same-sex couples. Coping skills programs to deal with the emotional impact of the COVID-19 pandemic could also prevent that external stress spill over into relational processes, with potential negative consequences on individual well-being.

The COVID-19 pandemic has affected the entire world, generating the greatest health and social crisis of the last century. It has impacted several levels, including the relational one (Pietromonaco & Overall, 2020), as also highlighted in the present study of couples from a vulnerable population such as LGBT. During the COVID-19 pandemic there has been an increase in the prevalence of depression (Bueno-Notivol et al., 2021; Luo et al., 2020), which is one of the most prevalent mental disorders worldwide and a major concern for public health. Based on our findings, satisfactory couple relationships can act as a protective factor against depressive symptoms in the LGBT population.

### **Disclosure statement**

The authors declare that there is no conflict of interest regarding the publication of this article.

### **Funding**

This work was supported by the National Fund for Scientific and Technologic Development of Chile [FONDECYT 1190240].

### **Data availability**

The datasets analyzed during the current study are not publicly available due to privacy issues related to the participants, but are available from the corresponding author by reasonable request.

### **References**

- Ahorsu, D. K., Imani, V., Lin, C., Timpla, T., Broström, A., Updegraff, J., ... Pakpour, A. H. (2020). Associations between fear of COVID-19, mental health, and preventive behaviours across pregnant women and husbands: An actor-partner interdependence modelling. *International Journal of Mental Health and Addiction*, 20(1), 68–82. doi:10.1007/s11469-020-00340-x

- Bahamondes, J. (2016). System justification's opposite effects on psychological well-being: Testing a moderated mediation model in a gay men and lesbian sample in Chile. *Journal of Homosexuality*, *63*(11), 1537–1555. doi:10.1080/00918369.2016.1223351
- Balzarini, R. N., Muise, A., Zoppolat, G., Di Bartolomeo, A., Rodrigues, D. L., Alonso-Ferres, M., ... Slatcher, R.B. (2020). Love in the time of Covid: Perceived partner responsiveness buffers people from lower relationship quality associated with Covid-related stressors. PsyArXiv. doi:10.31234/osf.io/e3fh4
- Barrientos, J. (2016). Situación social y legal de gays, lesbianas y personas transgénero y la discriminación contra estas poblaciones en América Latina. *Sexualidad, Salud y Sociedad*, *22*, 331–354. doi:10.1590/1984-6487.sess.2016.22.15.a
- Barrientos, J., Ramírez, C., & González, B. (2022). Políticas antigénero en el contexto pandémico: Chile. In S. Correa (Ed.), *Políticas antigénero en América Latina en el contexto pandémico* (pp. 93–130). Rio de Janeiro, Brazil: Sexuality Policy Watch. <https://sxpolitics.org/GPAL/uploads/E-book-Covid-ES.pdf>
- Beach, S. R. H., Sandeen, E., O'Leary, K. D., & Barlow, D. H. (1990). *Depression in marriage: A model for etiology and treatment* (1st ed.). New York, NY: Guilford Press.
- Bernardo, A. B. I., Mendoza, N. B., Simon, P. D., Cunanan, A. L. P., Dizon, J. I. W. T., Tarroja, M. C. H., ... Saplala, J. E. G. (2020). Coronavirus Pandemic Anxiety Scale (CPAS-11): Development and initial validation. *Current Psychology*, *13*, 1–9. doi:10.1007/s12144-020-01193-2
- Bueno-Notivol, J., Gracia-García, P., Olaya, B., Lasheras, I., López-Antón, R., & Santabárbara, J. (2021). Prevalence of depression during the COVID-19 outbreak: A meta-analysis of community-based studies. *International Journal of Clinical and Health Psychology*, *21*(1), 100196. doi:10.1016/j.ijchp.2020.07.007
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, *14*(3), 464–504. doi:10.1080/10705510701301834
- Chua, B. S., Siau, C. S., Fitriana, M., Low, W., & Khan, R. K. A. W. (2021). Psychological distress, relationship quality, and well-being among Malaysian couples during the COVID-19 pandemic. *Asia Pacific Journal of Public Health*, *33*(5), 660–661. doi:10.1177/10105395211014322
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). London: Routledge.
- Davila, J., Karney, B. R., Hall, T. W., & Bradbury, T. N. (2003). Depressive symptoms and marital satisfaction: Within-subject associations and the

- moderating effects of gender and neuroticism. *Journal of Family Psychology*, *17*(4), 557–570. doi:10.1037/0893-3200.17.4.557
- Dekel, R., Vilchinsky, N., Liberman, G., Leibowitz, M., Khaskia, A., & Mosseri, M. (2014). Marital satisfaction and depression among couples following men's acute coronary syndrome: Testing dyadic dynamics in a longitudinal design. *British Journal of Health Psychology*, *19*(2), 347–362. doi:10.1111/bjhp.12042
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G\*Power 3: A flexible statistical power analysis program for the social, behavioral and biomedical sciences. *Behavior Research Methods*, *39*, 175–191. doi:10.3758/BF03193146
- Galdiolo, S., Culot, S., Delannoy, P., Mauroy, A., Laforgue, F., & Gaugue, J. (2022). Harmful stress-related couple processes during the COVID-19 pandemic and lockdown: A longitudinal dyadic perspective. *Frontiers in Psychology*, *13*, 819874. doi:10.3389/fpsyg.2022.819874
- Garrido-Rojas, L., Guzmán-González, M., Mendoza-Llanos, R., Rivera-Ottenberger, D., & Contreras-Garay, P. (2021). Emotional regulation and depression in a sample of separated and divorced Chilean adults. *Current Psychology*, *40*(4), 1767–1778. doi:10.1007/s12144-018-0103-5
- Gato, J., Barrientos, J., Tasker, F., Miscioscia, M., Cerqueira-Santos, E., Malmquist, A., ... Wurm, M. (2021). Psychosocial effects of the COVID-19 pandemic and mental health among LGBTQ + young adults: A cross-cultural comparison across six nations. *Journal of Homosexuality*, *68*(4), 612–630. doi:10.1080/00918369.2020.1868186
- Gempp, R., Avendaño, C., & Muñoz, C. (2004). Normas y punto de corte para la Escala de Depresión del Centro para Estudios Epidemiológicos (CES-D) en población juvenil chilena. *Terapia Psicológica*, *22*(2), 145–156. <https://www.redalyc.org/pdf/785/78522205.pdf>
- Goldfarb, M. R., & Trudel, G. (2019). Marital quality and depression: A review. *Marriage & Family Review*, *55*(8), 737–763. doi:10.1080/01494929.2019.1610136
- Gonzalez, R., & Griffin, D. (1997). On the statistics of interdependence: Treating dyadic data with respect. In Duck, S. (Ed.), *Handbook of personal relationships: Theory, research, and interventions* (2nd ed., pp. 271–302). New York: Wiley.
- Guzmán-González, M., Barrientos, J., Gómez, F., Meyer, I. H., Bahamondes, J., & Cárdenas, M. (2020). Romantic attachment and relationship satisfaction in gay men and lesbians in Chile. *The Journal of Sex Research*, *57*(8), 1026–1035.
- Hendrick, S. S. (1998). A generic measure of relationship satisfaction. *Journal of Marriage and Family*, *50*(1), 93–98. doi:10.2307/352430
- Hidalgo, M. A., Suarez, N. A., Garofalo, R., Hoehnle, S., Thai, J., Mimiaga, M. J., ... Stephenson, R. (2018). Clinically significant depressive symptoms among a

- diverse sample of same-sex male couples in Atlanta, Boston, and Chicago: An analysis of individual- and dyadic-level factors. *Journal of Gay & Lesbian Mental Health*, 22(4), 327–347. doi:10.1080/19359705.2018.1476278
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. doi:10.1080/10705519909540118
- Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis* (1st ed.). New York: Guilford Press.
- King, M., Semlyen, J., See Tai, S., Killaspy, H., Osborn, D., Popelyuk, D., & Nazareth, I. (2008). A systematic review of mental disorder, suicide, and deliberate self-harm in lesbian, gay and bisexual people. *BMC Psychiatry*, 8, 70. doi:10.1186/1471-244X-8-70
- Kira, I. A., Shuwiekh, H. A., Rice, K. G., Ashby, J., Elwakeel, S. A., Sous, M. S. F., ... Jamil, H. J. (2020). Measuring COVID-19 as traumatic stress: Initial psychometrics and validation. *Journal of Loss and Trauma*, 26(3), 220–237. doi:10.1080/15325024.2020.1790160
- Ledermann, T., Macho, S., & Kenny, D. (2011). Assessing mediation in dyadic data using the actor–partner interdependence model. *Structural Equation Modeling: A Multidisciplinary Journal*, 18(4), 595–612. doi:10.1080/10705511.2011.607099
- Li, Y., & Samp. J. A. (2021). The impact of the COVID-19 pandemic on same-sex couples' conflict avoidance, relational quality, and mental health. *Journal of Social and Personal Relationship*, 38(6), 1819–1843. doi:10.1177/02654075211006199
- Luetke, M., Hensel, D., Herbenick, D., & Rosenberg, M. (2020). Romantic relationship conflict due to the COVID-19 pandemic and changes in intimate and sexual behaviors in a nationally representative sample of American adults. *Journal of Sex and Marital Therapy*, 46, 747–762. doi:10.1080/0092623X.2020.1810185
- Luo, M., Guo, L., Yu, M., Jiang, W., & Wang, H. (2020). The psychological and mental impact of coronavirus disease 2019 (COVID-19) on medical staff and general public—A systematic review and meta-analysis. *Psychiatry Research*, 291, 113190. doi:10.1016/j.psychres.2020.113190
- MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, 39, 99–128. doi:10.1207/s15327906mbr3901\_4
- Maroufizadeh, S., Hosseini, M., Foroushani, A.R., Omani-Samani, R., & Amini, P. (2018). The relationship between marital satisfaction and depression in infertile couples: An actor–partner interdependence model approach. *BMC Psychiatry*, 18, 310. doi:10.1186/s12888-018-1893-6



- Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin*, *129*(5), 674–697. doi:10.1037/0033-2909.129.5.674
- Olsen, J. A., & Kenny, D. A. (2006). Structural equation modeling with interchangeable dyads. *Psychological Methods*, *11*(2), 127–141. doi:10.1037/1082-989X.11.2.127
- Peugh, J. L., DiLillo, D., & Panuzio, J. (2013). Analyzing mixed-dyadic data using structural equation models. *Structural Equation Modeling: A Multidisciplinary Journal*, *20*(2), 314–337. doi:10.1080/10705511.2013.769395
- Phillips, G., Felt, D., Ruprecht, M. M., Wang, X., Xu, J., Pérez-Bill, E., Bagnarol, R. M., Roth, J., Curry, C. W., & Beach, L. B. (2020). Addressing the disproportionate impacts of the COVID-19 pandemic on sexual and gender minority populations in the United States: Actions toward equity. *LGBT Health*, *7*(6), 279–282. doi:10.1089/lgbt.2020.0187
- Pietromonaco, P. R., & Collins, N.L. (2017). Interpersonal mechanisms linking close relationships to health. *American Psychologist*, *72*(6), 531–542. doi:10.1037/amp0000129
- Pietromonaco, P. R., & Overall, N. C. (2020). Applying relationship science to evaluate how the COVID-19 pandemic may impact couples' relationships. *American Psychologist*, *76*(3), 438–450. doi:10.1037/amp0000714
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*, 879–891. doi:10.3758/BRM.40.3.879
- Radloff, L. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*(3), 385–401. doi:10.1177/014662167700100306
- Randall, A. K., & Bodenmann, G. (2017). Stress and its associations with relationship satisfaction. *Current Opinion in Psychology*, *13*, 96–106. doi:10.1016/j.copsyc.2016.05.010
- Rivera, D., Cruz, C., & Muñoz, C. (2011). Satisfacción en las relaciones de pareja en la adultez emergente: el rol del apego, la intimidad y la depresión. *Terapia Psicológica*, *29*(1), 77–83. doi:http://doi.org/10.4067/S0718-48082011000100008
- Ross, L. E., Salway, T., Tarasoff, L. A., MacKay, J. M., Hawkins, B. W., & Fehr, C. P. (2018). Prevalence of depression and anxiety among bisexual people compared to gay, lesbian, and heterosexual individuals: A systematic review and meta-analysis. *The Journal of Sex Research*, *55*(4-5), 435–456. doi:10.1080/00224499.2017.1387755
- Sommantico, M., & Parrello, S. (2021). Internalized stigma, adult attachment, relationship satisfaction, and depression in Italian gay and bisexual men: The

mediating role of emotion regulation. *Journal of Gay & Lesbian Mental Health*, 26(2), 158–175. doi:10.1080/19359705.2021.1913463

Turliuc, M. N., & Candel, O. S. (2021). Not all in the same boat. Socioeconomic differences in marital stress and satisfaction during the Covid-19 pandemic.

*Frontiers in Psychology*, 12, 635148. doi:10.3389/fpsyg.2021.635148

Villeneuve, L., Trudel, G., Dargis, L., Prévaille, M., Boyer, M., & Bégin, J. (2014). Marital functioning and psychological distress among older couples over an 18-month period. *Journal of Sex & Marital Therapy*, 40(3), 193–208.

doi:10.1080/0092623x.2012.736919

Woody, E., & Sadler, P. (2005). Structural equation models for interchangeable dyads: Being the same makes a difference. *Psychological Methods*, 10(2), 139–158. doi:10.1037/1082-989X.10.2.139