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# Anxiety, past trauma and changes in relationships in Japan during COVID-19

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| A R T I C L E   I N F O | A B S T R A C T |
|---|---|
| | Widely shared traumas have the potential to both improve and impair our relationships with others. During COVID-19 anxiety has been seen as a major individual vulnerability associated with relationship change, as have the wider economic, situational factors facing families and communities. In this national sample of 997 Japanese respondents we assessed perceived relationship changes in couple relations, neighbourhood relations, and wider relations with Japanese nationals, alongside anxiety, exposure to previous mass traumas, household economics, education, and vulnerability to COVID-19. Whilst most respondents reported little change in their relationships during this year there was a small overall improvement in couple relationships and a decline in relations with wider communities. Participant's economic resources were positively associated with an improvement in couple relationships, while anxiety was associated with a decline in relations with both the neighbourhood and the wider society. While neither prior experience of mass trauma, nor education or health vulnerability to COVID-19, were associated with relationship change, having time to talk, and younger age, was positively associated with improvement in couple relations. Findings suggest that anxiety can function to distance relationships during a time of stress, but perceived changes in relationships are little effected by experience of previous trauma. Relationship growth is likely to be greatest in those with better economic conditions. Practitioners need to be mindful of the impact of enhanced anxiety during the pandemic on interpersonal relations, and a potential threat to the relationships of older couples during this time of pandemic threat. |

As the COVID-19 pandemic enters its third year, several studies have sought to understand the impact of the challenges and life changes incurred on personal relationships. The Vulnerability-Stress-Adaptation framework (VSA)) considers how pre-existing factors (e.g. social class, history of trauma) enduring vulnerabilities (e.g. anxiety) and pandemic-induced variables (e.g. loss of work) influence relationship processes, quality and stability (Fleming and Franzese 2021; Schokkenbroek et al., 2021; Pietromonaco and Overall, 2021). Prior psychological trauma can place a psychological toll on individuals, weakening their ability to deal with a new stressor (Weinberg et al., 2018; Xu and Feng, 2016). Lockdowns can keep already feuding couples in close proximity, while the disruption of family routines spills over into stress and anxiety (Hou et al., 2020). At the same time, spending time talking together can enhance relationship quality and ameliorate external stressors (Pietromonaco and Overall, 2021). Extending beyond the couple, research in the first months of COVID-19 suggested an enhancement in local community relationships (Xu et al., 2020), particularly amongst those

who exhibiting the greatest psychological distress (Goodwin et al., 2020a). However, it is unclear if any initial cohesion will persist, particularly as shared resources become threatened and resource inequalities are exacerbated (Bonanno et al., 2010). Shared trauma may also encourage a wider sense of national unity (ONS, 2020; Resta et al., 2021). However, as with community relations (Kaniasty and Norris, 1993), the sheer weight of events, disruption of daily lives, and lack of expected support can also lead to frustration with others from across the wider society (Kleber, 2019). This frustration is likely to be greatest amongst those who suffer the most economically during this crisis (Hobfoll, 2012).

To date, most work on COVID-19 has been conducted within Western societies. Our present research collected data in Japan. An early lockdown during May 2020 led to increased proportions of the Japanese population suffering from enhanced psychological distress and depression (Yamamoto et al., 2020). Such distress was particularly marked amongst the young, in those with underlying psychological problems,

and in those with lower total household income (Yamamoto et al., 2020). Deterioration of relations with familiar others was significantly associated with distress (Yamamoto et al., 2020). School closures led to a decline in marital relationships (Takaku and Yokoyama, 2020), with mental health declining amongst the less educated (Yamamura and Tsustsui, 2021). Community relations, historically important in Japan (Otani, 1999), are a vital resource to help buffer individuals against distress following such events (Goodwin et al., 2020b). However, in a society often viewed as cohesive, the perceived inefficacy of the government in its COVID response had undermined public trust by the time of our study (one year into the pandemic) (JIJICOM, 2021).

At present, we know little about how vulnerabilities, stress and adaptation processes operate following COVID-19 in countries with a sustained history of natural disasters. Drawing on the VSA model, as well as related research on economic factors and relationship functioning (White and Rogers, 2000), we examine reported relationship change across a range of interpersonal relationships, from relationship partners to community relations and wider Japanese society at large. We hypothesise that those who were more socially vulnerable (poor economic conditions, no graduate education), those with situational stressors (members of a COVID-19 risk group, lost income during the pandemic) and those with pre-existing or enduring individual vulnerabilities (high levels of anxiety, a history of suffering during previous psychological trauma) will experience the most negative changes in each of these different relationships. We also suggest that couples who exhibit adaptive responses (spending increased time talking to each other) will report an enhanced relationship.

## 1. Method

### 1.1. Participants

Because of pandemic restrictions we employed an established survey panel to advertise the study on their portal, consistent with current recommendations on the use of online surveys in higher income countries where digital penetration is widespread (Hlatshwako et al., 2021)). A large Japanese survey company (GMO) advertised for respondents via their national panel and applied quotas (by age, sex and region) until the sample was representative of national populations. Inclusion criteria required participants to be the approved age criteria set by ethical requirements (aged from 20 to 70), and to successfully pass validation checks, including specific items to check attention and timing of responses. Participants were paid digital tokens worth approximately 100 Japanese yen. All respondents were questioned in Japanese using translated versions of the inventories. Because we additionally collected information on vaccine willingness (reported elsewhere: Goodwin et al., 2022) data was collected on the days preceding the national vaccine rollout (February 15th and February 16, 2021). At the time of data collection a state of emergency had been declared in ten Prefectures including Tokyo. Japan had at this point reported 419,000 cases and 7144 deaths, compared to more than 4 million cases and 118,000 deaths in the UK, 27 million cases and 489,000 deaths in the US (Ritchie et al., 2021).

Of a total of 1138 responding to the participant request 997 (87.6%) met the age criteria, passed validation checks and completed the survey (M age 45.63 (SD14.11), 514 female). Five hundred and ninety-five respondents were in a couple relationship. Ethical approval was provided by the Yamaguchi University Review Committee. Sample characteristics are provided in Table 1.

### 1.2. Measures

### 1.2.1. Demographics

Alongside age and sex respondents identified whether they completed only high school prior to University or were currently a student/had graduated (coded as academic vs. non-academic).

**Table 1**
Sociodemographic characteristics and variables assessed (N = 997).

| | Frequency | Mean (SD) |
|---|---|---|
| Age | | 45.63 (14.11) |
| Sex (female) | 514 (52) | |
| Risk group (risk group member) | 190 (19.1) | |
| Education (graduate or currently a student) | 473 (47.4) | |
| Economic situation (bad (1) to very good (4)) | | 1.87 (.74) |
| Decreased family income due to pandemic (yes) | 186 (19.4) | |
| Anxiety (GAD, mean score from 0 to 3) | | 4.01 (4.65) |
| Diagnosed with COVID-19 (yes)[a] | 2 (0.2) | |
| Know others with COVID-19 (yes)[a] | 11 (1.1) | |
| Impact of previous traumatic events (seven separate events, five-point scales (*not at all* (1) to *very much, life changing* (5)) | | 12.46 (4.80) |
| Time to spend talking with family (1–5, decreased to increased) | | 3.13 (.75) |
| Perceived changes in relationships (1–5, worsen to improved) | | |
| Intimate relationships | | **3.05 (.44)** |
| - Passion | | 3.04 (.47) |
| - Intimacy | | 3.05 (.48) |
| - Commitment | | 3.07 (.48) |
| Neighbourhood | | **2.95 (.30)** |
| - Belonging | | 2.97 (.28) |
| - Receive help | | 2.92 (.42) |
| - Trust | | 2.96 (.40) |
| Japanese in general | | **2.92 (.35)** |
| - Receive help | | 2.94 (.40) |
| - Trust | | 2.91 (.46) |
| - Overall **relationship** | | 2.89 (.44) |

[a] Because of small frequencies these were not included in the multivariate analyses.

Respondents indicated their group membership using the US CDC risk group memberships (e.g hypertension, diabetes), if they had been formally diagnosed with COVID-19 (yes, no), and whether someone from their social circle had been thus diagnosed (yes, no). Participants scored their economic situation overall (*How is your economic condition*), rated from (1) bad to (4) very good: to assess economic changes since the pandemic respondents indicated whether the COVID-19 crisis led to them being unemployed or decreased family income (yes/no).

### 1.2.2. Past trauma and anxiety

To measure previous traumatic experiences respondents indicated the impact of seven different major events in Japan on their personal lives (the 2011 Great East Japan Earthquake and Fukushima Daiichi Nuclear Disaster, the 2016 Kumamoto Earthquake, the 1995 Southern Hyogo Prefecture Earthquake, the 2018 Japan floods, the HIV-trained blood scandal in Japan and the Minamata disease outbreak) (5-point scales, from *not at all* to *very much, life changing)*. To assess anxiety respondents completed the Japanese translation of the widely used GAD-7 (Muramatsu et al., 2009), a seven-item assessment of anxiety symptoms in the previous two weeks (4 points, from *not at all* to *nearly every day*).

### 1.2.3. Relationships

We examined relationship changes by asking *As a result of the COVID-19 outbreak my …. has become.* (*very much worse* to *very much better*, 5 points), assessing changes in couple relations (passion, intimacy and commitment to the partner), neighbourhood relations (feelings of belonging to the neighbourhood, belief that the neighbourhood will be helpful, trust in local community) and relations with the wider Japan (trust in Japanese people, belief that Japanese people will be helpful, overall change towards Japanese people in general). Inter-item correlations were acceptable for couple relationships (α = 0.93), neighbourhood (α = 0.72) and Japan in general (α = 0.75). To assess family relationships during the pandemic we additionally asked participants about how COVID-19 influenced their availability of *Time to talk to family* (5 points, *this decreased* to *this increased*).

## 1.3. Analytic strategy

We first report perceived relationship change scores for each relationship grouping (couple, neighbourhood, Japan in general), running one-sample t-tests against the score value of 3 (indicating no change). We then regress relationship change scores on covariates from the VSA model in stepwise regressions, entering first general vulnerabilities and demographics (age, sex, whether academically educated, previous traumatic experiences, economic position overall) then (step 2) COVID-19 specific vulnerabilities (membership of a risk group, whether had lost job/income due to the pandemic, current anxiety). For couple items only we also include Time to Talk to Family in step 2.

## 2. Results

### 2.1. Trauma and anxiety

Mean scores, standard deviations and frequencies are presented in Table 1. Using the GAD-7 cut-offs of 10 or over, 15 or over (for moderate and high anxiety respectively, Spitzer et al., 2006), 14.3% (143 respondents) met the moderate anxiety criterion, 3.7% the high anxiety criteria. GAD-7 scale alpha was satisfactory ($\alpha = 0.92$). Mean anxiety scores were higher for women than men (Ms 4.42 vs. 3.57 respectively, t (995) = 2.90, P = .004), and for younger respondents (r (997) = −0.20 P < .001). Men were more likely to report previous traumatic experiences (t (923) = 3.01 P = .003), as were older respondents (r (986) = 0.13 P = .01).

### 2.2. Relationships and the VSA predictors

We examined mean scores for perceived changes in relationships during versus prior to COVID-19 using one-sample t-tests against a 'no change' mid-point. Change in the mean score for couples (M = 3.05, SD 0.44) indicated a significant improvement (one sample *t*-test t = 2.87 P = .004, Cohen's d = 0.12), but a decline in relations with neighbours (M = 2.95, t = −5.03 P = .001, d = −0.16) as well as a decline in relations with the wider nation (M = 2.92, t = −7.58 P = .001, d = −0.24). (Fig. 1). This decline can also be seen in frequencies of change (Supplement 1); while more than 80% of respondents reported 'no change' for each relationship characteristic more than a hundred respondents declared a decline in their trust and general relationships with the Japanese populace as a whole (11% and 12% of respondents, respectively).

Table 2 shows regressions on perceived positive relationship change using predictors from the VSA model. Older respondents were less likely to report enhanced couple relationships, as were those with less time to talk to their family and those with a poorer economic situation in general. Lower anxiety was significantly associated with improved community relations and relations with the Japanese society.
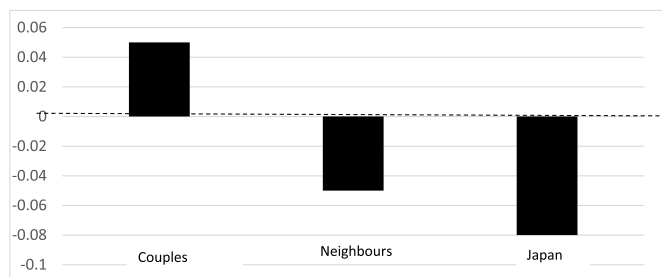


**Fig. 1.** Perceived change in relationship qualities from before the pandemic. Linear transformation of 5-point perceived relationship change scale (mean raw score - 3 (scale midpoint indicating no change)). The dotted line (0) indicates no change.

**Table 2**
Regression predictors of perceived improvements in relationships since the pandemic (Standardised Betas, Step 2).

|  | Partnerships | Neighbourhood | Wider Japan |
|---|---|---|---|
| Age | **-.14**\*\* | -.00 | -.01 |
| Sex (female) | -.01 | -.02 | .03 |
| Education (not graduate) | -.02 | .04 | -.03 |
| Economic situation | **.11**\* | .08 | .07 |
| Past traumas | -.05 | .04 | -.02 |
| Riskfactors (no) | -.01 | .04 | .01 |
| Decreased income (no) | -.00 | .05 | -.00 |
| GAD total | -.08 | **-.09**\* | **-.12**\*\*\* |
| Time to talk with family | **.29**\*\*\* | | |

*Note* \*\*\*p < .001; \*\*p < .01 \* p < .05. $R^2$ adjusted = 0.13 (couples), 0.02 (neighbours), 0.02 (wider society).

## 3. Discussion

Major mass traumas have the potential to both improve or undermine our relationships with others (Cohan and Cole, 2002). One important way of coping with personal threats to one's mortality is to seek support and intimacy from others (Florian et al., 2002). However, shared social stressors place major challenges for individuals, particularly those already with diminished resource (Hobfoll, 2012). In our analysis of perceived relationship change we found that, while the majority of respondents reported no change in their personal relationships, respondents, on average, recorded a small increase in the quality of their relations with their partners and a decline in their other wider relations. Drawing on the VSA model, economic vulnerabilities (beyond losing employment or income from the pandemic) were a significant factor for changes in couple relations, whilst the adaptive dyadic process of spending time with the family was positively associated with relationship enhancement. Psychological vulnerability (anxiety) was only marginally associated with couple relations but more strongly associated with enhanced relationships with relations beyond the couple (with the neighbourhood or wider society). Prior individual vulnerabilities (past traumatic experiences, health vulnerability to COVID-19) were not associated with perceived relationship change.

Anxiety has been widely reported to have increased during the pandemic (Kwong et al., 2021; Shevlin et al., 2020). While, compared to previous studies using GAD-7 conducted prior to the pandemic, our respondents indicated comparatively high rates of anxiety (e.g. 14.3% scored above the cut-off for moderate anxiety, compared to the 5% scoring above this threshold in a national German sample, Löwe et al., 2008)) other Japanese panel data collected during April 2020 and using the same anxiety measure reported levels closer to our data (10.9% reporting moderate anxiety, 4.2% severe anxiety symptoms: Ueda et al., 2020). However, these high levels of anxiety do not seem to have had the positive association with relationship growth predicted by some: instead, anxiety was associated with relationship decline, in line with the VSA model. While we cannot tell from our cross-sectional data whether underlying anxieties caused relational problems or vice versa, we would anticipate that, whilst trait anxiety may predict later relationship trauma (Caughlin et al. 2000), state anxiety is more proximally associated with the stresses of COVID-19 (e.g via the physical containments which can increase anxiety: Galea et al., 2020). The significant associations between having time to talk to the family and relationship quality suggests that communication is particularly significant for couples during this time of shared stress.

Japan has a highly literature population with high levels of internet penetration (World Bank, 2020). The pandemic also encouraged the use of online surveys for research. However, we acknowledge a number of limitations to our data and data collection processes. Effect sizes were generally small, particularly when considering changes in relationships beyond the couple. This may because while COVID-19 has been shown to exacerbate a range of existing structural and health vulnerabilities

(Abrams et al., 2021) we assessed only a limited number of such variables in our study. We also recognise that many of the past traumas we assessed were less pertinent to younger Japanese respondents, while respondents may have experienced trauma or major life events not assessed in this study. In addition, Japanese respondents may be less willing to use extreme responses in their survey responses than some other samples (Tasaki and Shin, 2017), potentially reducing willingness to report substantial relationship change. We did not consider relationships with specific outgroups who may have been subject to particular distancing during the pandemic, either as a result of historical discrimination or as a consequence of pandemic-specific fears (e.g. belonging to a cultural group associated with initial spread: Schimel et al., 1999). We collected only cross-sectional data, limiting our ability to address directionality of the associations we report. Whilst we strove for a representative sample, quota sampling makes ascertaining accurate response rates problematic (Baker et al., 2013).

Our findings have a number of implications. First, one year into the pandemic, it was evident, in Japan at least, most relationships with others were judged as similar in quality to pre-pandemic times. This may be the result of relatively low levels of mortality and morbidity at the time of the survey. Our findings may also reflect a country with a history of natural disasters, and the subsequent familiarity of the general population in mobilising against mass trauma (Goodwin et al., 2020b). Where there was change, this was most positive in couple relations, and more negative for other relations, similar to findings reported in China in the first months of the pandemic (Goodwin et al., 2020a). Social support from others, including community members. has an important buffering role, reducing loneliness amongst the most anxious during traumatic times (Xu et al., 2020). It will therefore be important that these wider relationships are maintained as far as possible to avoid longer-term trauma (Ozer et al., 2003). Anxiety was negatively associated with relationship growth amongst the neighbourhood and the wider society, suggesting that practitioners need to be mindful of effective interventions to reduce anxiety in order to enhance societal cohesion. Finally, older couples were the least likely to report positive relationship change. Divorce in later life ("jukunen rikon") has become increasingly prevalent in Japan (Kumagai, 2015), suggesting a particular need to pay attention to the relationship well-being of older Japanese during this time of crisis.

## 4. Conclusion

One year into the pandemic, most people in Japan did not report major changes in their relations with others. Where change was reported improvement in couple relations was associated with good economic resources, time to talk, and younger age, while anxiety was associated with a decline in relations with wider society. Future work could consider the role of such factors on relationships over time as the pandemic continues to impact on our relations with others worldwide.

## CRediT statement

Robin Goodwin: Conceptualization, Writing- Original draft preparation, Writing- Review and editing Supervision, Formal analysis, Visualization, Masahito Takahashi: Methodology, Funding acquisition, Software. Data curation, Supervision, Resources, Investigation, Writing-Review and editing.

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## Declaration of competing interest

The authors declare no conflicts of interest.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jpsychires.2022.04.032.

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