**Improvements in compassion and fears of compassion throughout the COVID-19 pandemic: A multinational study**

Short title: *Changes in compassion and fears of compassion during the COVID-19 pandemic*

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The authors declare no conflict of interest.

**Ethical standards:**

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

**CRediT authorship contribution statement**

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**Improvements in compassion and fears of compassion throughout the COVID-19 pandemic: A multinational study**

**Abstract**

During large-scale disasters, social support, caring behaviours and compassion have been shown to protect against poor mental health outcomes. This multi-national study aimed to assess the fluctuations in compassion over time during the COVID-19 pandemic. Respondents (time 1 *n* = 4156, time 2 *n* = 980, time 3 *n* = 825) from 21 countries completed online surveys measuring the flows of compassion and fears of compassion toward self, others and from others, and measures of mental health at three time-points during a 10-month period. The results for the flows of compassion showed that self-compassion increased at time 3. Compassion for others increased at time 2 and 3 for the general population, but in contrast it decreased in health professionals, possibly linked to burnout. Compassion from others did not change in time 2, but it did increase significantly in time 3. For fears of compassion, fears of self-compassion for reduced over time, fears of compassion for others showed more variation, reducing for the general public but increasing for health professionals, whilst fears of compassion from others did not change over time. Health professionals, those with compassion training, older adults and women showed greater flows of compassion and lower fears of compassion compared with the general population, those without compassion training, younger adults, and men. These findings highlight that in a period of shared suffering people from multiple countries and nationalities show a cumulative improvement in compassion and reduction in fears of compassion, suggesting that, when there is intense suffering, people become more compassionate to self and others and less afraid of, and resistant, to compassion.

**Keywords:** Compassion; Fears of compassion; COVID-19; Longitudinal; Multilevel modelling; Multinational study; Pandemic

**Improvements in compassion and fears of compassion throughout the COVID-19 pandemic: A multinational study**

**Introduction**

With more than half a billion infections and over 6.5 million deaths worldwide and rising (Worldmeters, 2022), the coronavirus (COVID-19) pandemic has proved to be a major and ongoing stressor. Several studies have shown a significant increase in psychological distress in the general population when compared to pre-pandemic levels (e.g., Gloster et al., 2020; Murphy et al., 2020; Serafini et al., 2020; Xiong et al., 2020), and that these increases in psychological distress are likely to stem from COVID-related factors (e.g., fear of contracting the virus; e.g., Fitzpatrick et al., 2020) but also social factors such as isolation (IASC, 2020; Lee et al., 2020; Palgi et al., 2020; Wang et al., 2020).

Self-isolation due to governmental measures (e.g., school/work closures, travel bans), had a significant impact on mental health (Lee et al., 2020; Hossain et al., 2020; Smith & Lim, 2020; Wang et al., 2020; Wong et al., 2020) and has been particularly taxing to those with pre-existing mental health conditions (Murphy et al., 2020). Self-isolation has also impacted social support in all its three facets of: 1) received social support (e.g., ‘being able to receive help from others’), 2) perceived social support (e.g., ‘experiencing connection with others’), and 3) social embeddedness (e.g., ‘perceiving belonging to a community’) (Kaniasty, 2020),. Social support has been a significant protective factor and predictor of better mental health outcomes in previous natural disasters settings (McGuire et al., 2018; Sasaki et al., 2019; Shang et al., 2019).

Compassion is a process that has permeated the literature regarding the ability to engage in social support, social connection and caring behaviours (for self and others) and is likely to be influential in the development of caring behaviours during the COVID pandemic. Studies of compassion and social connection during the pandemic have indeed shown these to be protective factors against mental health (Matos et al., 2021d, 2022b). The conceptualisation and definition of compassion researched and measured in this study derives from Compassion Focused Therapy (CFT) which is a Buddhist informed (Dalai Lama, (1995) evolutionary and biopsychosocial approach (Gilbert, 2014). This approach indicates how the evolution of caring behaviour, primarily but not only parent-infant caring, created the motivation and appropriate psychophysiological infrastructures to detect and be sensitive to the needs and suffering of another (e.g., infant) and then to act to alleviate distress and address needs. This definition highlights the stimulus-response algorithm of compassion motivation of: 1) being prepared and willing to engage with (stimuli) indicators of distress and need (e.g., signals of distress such as crying), rather than ignore or avoid them, and 2) responding in appropriate (wise) ways to alleviate distress and address need (Gilbert, 2019). Our capacities to engage and be sensitive to distress stimulate different psychophysiological processes to those of working out what to do and doing it (. Hence, there are very clear physiological effects of behaving compassionately which impact on coping with challenges such as the COVID-19 pandemic. Reviews and meta-analyses of compassion-based interventions (such as CFT) demonstrate that interventions that help people become more empathic and sensitive to suffering and take an interest in being helpful, mitigates mental health difficulties and improves wellbeing across both clinical and non-clinical populations (Basran et al., 2022; Craig et al., 2021; Kirby et al., 2017; Leaviss & Uttley, 2015).

Compassion can be given and received, and hence measures of compassion capture these different flows of having compassion for oneself, receiving compassion from others and giving compassion to others. Interventions seeking to improve compassion in general community populations have been shown to improve compassion for self and from others (Irons & Heriot-Maitland, 2020; Matos et al., 2017a; Sommers‐Spijkerman et al., 2020) and also, albeit to a lesser degree, compassion for others in certain contexts (i.e., teachers: Matos et al., 2021a, 2022a). Life disruptors such as the COVID-19 pandemic have also complemented this pattern of findings, with compassion for self and from others (to a greater degree than compassion for others) acting as a buffer against poor mental health (Matos et al., 2022b) and a facilitator of post-traumatic growth in this threatening context (Matos et al., 2021d).

Cross-sectional data has shown that self-compassion and compassion from others may be protective factors for greater psychosocial wellbeing in the pandemic context (Lau et al., 2020; Li et al., 2021; Kavakli et al., 2020; Matos et al., 2022b; Samios et al., 2021). However, changes in compassion across time have been scarcely explored and specifically, to our knowledge, how the flows of compassion (self-to self, self-to-other, and other-to-self) fluctuate over the course of the COVID-19 pandemic is yet to be examined. The current longitudinal study offers an opportunity to examine compassion over time and in the context of a major life disruptor event (i.e., the pandemic).

In short-term studies investigating the temporal stability (i.e., re-test reliability) of compassion self-report measures, compassion towards oneself, others and received from others have been found to be relatively stable over time (e.g., Gilbert et al., 2017; Matos et al., 2021c; Medvedev et al., 2020). In a longitudinal study across seven years, Lee et al. (2021) found gender differences in the longitudinal trajectories of compassion towards others, with women having significantly higher levels than men throughout the follow-up period and across all age groups, although changes in compassion towards others were modest across age groups over a 7-year period. The trajectory of self-compassion revealed an inverse-U association of with age, and showed slight increases throughout the follow-up period, but remained stable among participants in their 20s and 90s. Furthermore, this study revealed that increases in compassion towards others and self-compassion were associated with better mental well-being and lower loneliness over time across the adult lifespan (Lee et al., 2021).

Despite the apparent wellbeing benefits of compassion, there are instances where barriers and resistances to compassion (across the flows) can occur. These have been termed ‘fears of compassion’ which can relate to early shame experiences and attachment trauma (e.g., where compassion triggers a grief response), valuing competitiveness (e.g., perceiving compassion as a barrier to success), or misconceptions around the term ‘compassion’ (e.g., perceiving it as a low social rank position) (Gilbert et al., 2011; Matos et al., 2017b). Fears of compassion, especially for oneself and from others, have been consistently associated with mental health outcomes, such as depression, anxiety, stress and well-being, and vulnerability factors, such as self-criticism and shame; and these associations have been found to be even stronger in clinical populations (Kirby et al., 2019).

In the pandemic context, cross-sectional data have shown that fears of compassion may be a risk factor for experiencing mental health difficulties (e.g., depression, anxiety stress: Matos et al., 2021b; posttraumatic stress: Matos et al., 2022b). Moreover, fears of compassion were found to magnify the damaging impact of the COVID-19 pandemic on mental health and social safeness (Matos et al., 2021b) and on posttraumatic stress (Matos et al., 2022b) across 21 countries. Nevertheless, the way fears of compassion may change over time has never been examined and, specifically, how fears of compassion fluctuate across time during the COVID-19 pandemic. Again, the current longitudinal study offers a unique opportunity to examine this.

In addition, research exploring how specific sociodemographic variables are related to the flows of compassion and fears of compassion is lacking or has produced mixed results. Previous research has found that self-compassion is greater in men (Yarnell et al., 2015), and older adults (Hwang et al., 2016), whilst compassion for others is greater in women (Gilbert et al., 2017; Lee et al., 2021). There are no previous studies which directly compare compassion in healthcare workers vs non-healthcare workers, however, prior to the pandemic, compassion fatigue in nurses had been increasing gradually from 2010 to 2019, with the worst levels in Intensive Care Unit staff (Wanqing et al., 2021). During the pandemic, lower levels of compassion satisfaction were detected in professionals working in areas with higher rates of contagion (Trumello et al., 2020). In terms of nationality demographics, a meta-analysis revealed the highest levels of compassion fatigue (and lowest levels of compassion satisfaction) were found in Asian Countries, with the opposite trend occurring in the Americas and Europe (Xie et al., 2021).

**Aims**

The current study aimed to explore the natural fluctuation (time changes) of compassion (for self, for others and from others) and of fears of compassion (for self, for others and from others) across time during the COVID-19 pandemic in a multinational community sample. It was expected that compassion might increase whilst fears of compassion might decrease in correspondence with threatening events (peaks in COVID-19 cases and lockdown measures) due to increased opportunities to demonstrate or receive compassion in response to distress in self and others. This would be consistent within the context of historical large-scale crises, where social support has been found to be a primary coping-mechanism (Saltzman, Hansel & Bordnick, 2020).

Furthermore, we aimed to examine whether specific variables (i.e., being a health professional, previous compassion training) would be associated with different baseline levels of the flows of compassion and fears of compassion, controlling for sociodemographic variables such as age and gender. It was hypothesized that being a health professional and having former compassion training would be associated with increased levels of compassion and decreased fears of compassion at the beginning of the pandemic.

**Materials and methods**

**Participants**

The research sample was gathered from 23 different countries. At the first measurement, the total sample consisted of 4156 participants, mean age 41.91 (*SD* = 14.79) ranging from 18 to 91 years, with 80.73% (*N* = 3355) self-identified as women, 18.45% (*N* = 767) as men, 0.34% (*N* = 14) as other, and 0.48% (*N* = 20) preferred not to respond. The research sample comprised of 4156 participants from 23 countries: Argentine (ARG) *N* = 257, Australia (AUS) *N* = 109, Brazil (BRA) *N* = 406, Canada (CAN) *N* = 114, Chile (CHL) *N* = 282, China (CHN) *N* = 77, Columbia (COL) *N* = 50, Cyprus (CYP) *N* = 38, Denmark (DNK) *N* = 141, France (FRA) *N* = 115, Great Britain (GBR) *N* = 268, Greece (GRE) *N* = 145, Italy (ITA) *N* = 160, Japan (JPN) *N* = 522, Mexico (MEX) *N* = 181, Peru (*N* = 10), Poland (POL) *N* = 82, Portugal (PRT) *N* = 394, Saudi Arabia (SAU) *N* = 216, Slovakia (SVK) *N* = 46, Spain (ESP) *N* = 392, The United States of America (USA) *N* = 128, and Uruguay (*N* = 23). There were 1396 (33.6%) health professionals and 2760 (66.4%) were not health professionals. 1441 (34.7%) participants had been involved in a compassion training and 2715 (65.3%) were not. At the second measurement there were altogether 980 participants and at the third measurement 825 participants.

 ***Measures***

The online survey collected sociodemographic information (nationality, country of residence, age, gender) and administered self-report instruments assessing compassion (i.e., compassion for self, from others, for others,), and fears of compassion (i.e., for self, from others, for others).

*Compassionate Engagement and Action Scales* (CEAS; Gilbert et al., 2017) includes three scales that assess the three flows of compassion: self-compassion, compassion to others and compassion received from others, with 13 items each. Each scale measures different elements of compassion *Engagement* (6 items and 2 filler items) and *Action* (4 items and 1 filler item). Participants are asked to rate each item on a ten-point Likert scale, based on how frequently it occurs, from 1 (never) to 10 (always). Each scale can be analysed in terms of the Engagement and Action components separately or as a single factor. Here we use each of the three flows of compassion as single factor scales. In the original study, the CEAS showed good internal consistencies and temporal reliability (Gilbert et al., 2017). In the present study, internal consistency ranged between good and excellent: Compassion for self-Engagement α = .74/Action α = .89; Compassion for others-Engagement α = .81/Action α = .88; Compassion from others-Engagement α = .91/Action α = .93.

*Fears of Compassion Scales* (FCS; Gilbert et al., 2011) are three scales that assess fears of compassion, one for each flow: 1) fears of feeling and expressing compassion for others (10-items), 2) fears of receiving compassion from others (13-items), 3) fears of compassion for self (15-items). Respondents are asked to rate on a five-point Likert scale how much they agree with each statement, from 0 (don’t agree at all) to 4 (completely agree). Higher scores represent higher fears of compassion.  In the original study, Cronbach’s alphas were .72 for FCS for others, .80 for FCS from others, and .83 for FCS self-compassion (Gilbert, et al., 2011). In the current study, internal consistencies ranged between .89 and .95 (FCS self-compassion α = . 93, FCS compassion for others α = . 89, FCS compassion from others α = . 95).

***Procedures***

The current study is part of a broader longitudinal multinational study on compassion, social connectedness and trauma resilience during the COVID-19 pandemic (e.g., Matos et al., 2021, 2022a, 2022b). The study was approved by the Ethics Committee of the [Blocked for Review] and was conducted in compliance with the 1964 Helsinki Declaration and its later amendments. Local national ethical approval was also obtained whenever necessary. The current study had longitudinal design and the analysis used data collected in three time points over a 10-month period during the pandemic, across 21 countries from Europe, (United Kingdom, Portugal, Spain, Italy, France, Greece, Cyprus, Poland, Slovakia, Denmark), North America (USA, Canada), South America (Brazil, Argentina, Chile, Colombia, Mexico), Asia (China, Japan), Oceania (Australia), and Middle East (Saudi Arabia).

According to ourworldindata.org and covidtracker.bsg.ox.ac.uk during Time 1 (mid-April 2020 to mid-May 2020) all countries had similar daily rates of confirmed new cases and deaths. With the notable exception of Japan (45%) the stringency index (a composite measure of nine of the response metrics including: school closures; workplace closures; cancellation of public events; restrictions on public gatherings; closures of public transport; stay-at-home requirements; public information campaigns; restrictions on internal movements; and international travel controls) (Hale et al. 2021) varied roughly between 70-100% during this time period. At Time 2 (mid-September to mid-October 2020), all countries exhibited similar daily rates of new cases and deaths with the exceptions of Argentina where there was a spike in deaths in the first week of October. The stringency index during Time 2 varied roughly between 30-70% in most countries with the exceptions of Argentina, Chile, Colombia, China and Australia which still had higher levels of stringency. At Time 3 (mid-January and mid-February 2021) all countries exhibited similar rates of new cases and deaths with the exception of the United Kingdom, Slovakia, Portugal and Spain which has elevated rates on these metrics comparatively with the remaining countries. During this same period, the stringency index was between 60-90% in most countries with the exception Australia, Japan and Saudi Arabia where stringency measures were lower. It is also important to note that during Time 3 vaccination campaigns across all countries were underway, with most countries reporting less than 5% of the population as being vaccinated with the exceptions of the United Kingdom (22%), United States (13%) and Chile (11%).

The study was disseminated through social and traditional media platforms and institutional/professional emailing lists in each country, using snowball sampling. In addition, Facebook ads were used to promote participation among the general population in some countries. Prior to completing the online survey, participants were informed about the study aims and procedures, and the voluntary and anonymous nature of participation. Confidentiality of the collected data was assured, and written informed consent was obtained before the completion of the study protocol. The survey was self-paced and about 25min long. There was no payment for completing the survey.

***Data analysis***

To account for the cluster structure of data (three data points for each respondent, and respondents being nested within countries), multilevel models were chosen. (Hox et al., 2017; Snijders & Bosker, 2012). Each of the models had two levels: the respondents were the level 1 units, and the countries were the level 2 units.

The statistical procedure was as follows: (1) fitting six multilevel models, with the same set of independent variables (predictors), but with the different dependent variable: a) CEAS compassion for self; b) CEAS compassion for others; c) CEAS compassion from others; d) FCS Fear of compassion for self; e) FCS Fear of compassion for others; f) FCS Fear of compassion from others; (2) for each model, we tested the fit of several nested models with the data by likelihood-ratio tests and information criteria AIC (Akaike information criterion) and BIC (Bayes Schwarz information criterion) to obtain a final model with the best fit: a) the null model included only the intercept; b) the second model was the multilevel model taking into account differences between countries (if adding countries as random effect did not improve the fit, we dropped this level altogether); c) the third model included main effects (predictors): time (factor with 3 levels), age (continuous), gender (factor with 2 levels), having compassion training or not (factor with 2 levels), being a health professional or not (factor with 2 levels). Adding these predictors should significantly improve the model, otherwise some or all of them could be dropped from the final model; d) the fourth model included interaction effects: time with having compassion training and time with being a health professional: these interactions allow comparison of different time effects between respondents who have  compassion training or not; or who are health professionals or not; e) the fifth model included the autocorrelation effect: because each respondent has provided three answers, residuals for each respondent could be autocorrelated with the result of  distortion of the model; f) the sixth model was heteroscedastic – it has estimated the different variance between strata (health professionals versus health non-professionals, compassion-trained versus compassion non-trained). Without taking into account the possible heteroscedasticity of the model, its estimations could be highly imprecise.

For statistical analyses we used the R program version 4.0.3 (R Core Team, 2020), “nlme” package (Pinheiro et al., 2020). The effects were displayed through “sjPlot” package (Lüdecke, 2018). As random effects, we used intercepts for participants and countries

R2 (‘variance explained’) statistics were used to measure the effect size of the model. However, there is no consensus as to the most appropriate definition of R2 statistics in relation to mixed-effect models (Edwards et al., 2008; Nakagawa & Schielzeth, 2013; LaHuis et al., 2014; Jaeger et al., 2016). Even though several methods for estimating the coefficient of determination (R2) for mixed-effect models are accessible, the estimation of R2 marginal and R2 conditional in “MuMIn” package (Barton, 2015) was performed. The marginal R2 is the proportion of variability explained by the fixed effects/independent variable, the conditional R2 is the proportion of variability explained by both fixed and random effects (differences between respondents and differences between countries).

The likelihood-ratio tests and Akaike Information Criterium (AIC) for all models are presented in Appendix 1. It is evident from Tables 1-6 that all multilevel models with country as random effect consistently had a better fit than models that did not take differences between countries into account. Secondly, autocorrelation, heteroscedasticity or both were present in all cases, therefore fitting models which deal with these issues was appropriate and justified.

**Results**

Considering self-compassion (Table 1) there was no significant change between time1 and time 2, but there was significant increase in time 3. Age and gender did not show any significant effects, and neither did comparison of health professionals and respondents with compassion training with general population. There were no significant effects of interaction of sociodemographic variables.

Table 1

*Estimates of the final model for self-compassion*

|  |  |  |  |
| --- | --- | --- | --- |
| **Fixed effects** | **β (SE)** | ***p*-value** |  |
| Intercept | 68.03(0.85) | .0000 |  |
| time2 | -0.25(0.17) | .1541 |  |
| time3 | 0.93(0.20) | .0000 |  |
| age | 0.02(0.01) |  .1476 |  |
| gender | 0.65(0.49) |  .1814 |  |
| health-professionals | 0.72(0.42) | .0888 |  |
| compassion-training | 0.42(0.42) | .3243 |  |
| **Variance components** | **σ2** | **effect size** | **autocorrelation** |
| respondents | 102.01 |  |  |
| countries | 2.56 |  |  |
| residuals | 86.49 |  |  |
| φ |  |  | 0.28 |
| R2 |  | 0.35 |  |

Compassion for others (Table 2) showed significant increases at time 2 and even more so in time 3. Older respondents showed significantly less compassion for others than younger respondents, there were no differences between women and men. Health professionals and respondents with compassion training showed no significant difference in comparison to the general population. However, compassion for others among health professionals significantly decreased between time 2 and time 3, but there was no significant effect among respondents with compassion training.

Table 2

*Estimates of the final model for compassion for others*

|  |  |  |  |
| --- | --- | --- | --- |
| **Fixed effects** | **β (SE)** | ***p*-value** |  |
| intercept | 76.94(0.98) | .0000 |  |
| time2 | 0.49(0.20) | .0156 |  |
| time3 | 1.30(0.23) | .0000 |  |
| age | -0.03(0.01) |  .0432 |  |
| gender | 0.82(0.44) |  .0637 |  |
| health-professionals | 0.80(0.43) | .0693 |  |
| compassion-training | 0.57(0.43) | .1872 |  |
| time2:health-professionals | -0.06(0.33) | .8644 |  |
| time3:health-professionals | -0.76(0.38) |  .0463 |  |
| time2: compassion-training | -0.61(0.33) | .0617 |  |
| time3: compassion-training | -0.52(0.38) |  .1696 |  |
| **Variance components** | **σ2** | **effect size** | **autocorrelation** |
| Respondents | 81 |  |  |
| Countries | 9.8 |  |  |
| Residuals | 70.06 |  |  |
| Φ |  |  | 0.34 |
| R2 |  | 0.40 |  |

Compassion from others did not change in time 2, but it did increase significantly in time 3 (Table 3). There were no significant differences between older and younger participants or between women and men or between those with compassion training and the general population.

Table 3

*Estimates of the final model for compassion from others*

|  |  |  |  |
| --- | --- | --- | --- |
| **Fixed effects** | **β (SE)** | ***p*-value** |  |
| intercept | 61.76(1.13) | .0000 |  |
| time2 | 0.30(0.23) | .1916 |  |
| time3 | 0.75(0.26) | .0040 |  |
| age | -0.00(0.02) |  .8553 |  |
| gender | -1.18(0.61) |  .0523 |  |
| health-professionals | 0.98(0.53) | .0620 |  |
| compassion-training  | 0.37(0.53) | .4851 |  |
| **Variance components** | **σ2** | **effect size** | **autocorrelation** |
| respondents | 152.52 |  |  |
| countries | 6.86 |  |  |
| residuals | 146.41 |  |  |
| φ |  |  | 0.24 |
| R2 |  | 0.31 |  |

Fears of self-compassion (Table 4) significantly decreased in time 2, and this decrease was maintained at a similar level in time 3. Older respondents showed significantly less fear of self-compassion than younger respondents, and so did women in comparison to men. Health professionals and respondents with compassion training had significantly less fear of self-compassion than general population. Fear of self-compassion among health professionals significantly decreased over time, albeit these levels were low at time 1 (baseline), and hence the magnitude of this decrease is smaller than the general population (as can be seen in Figure 1). Since our final model was heteroscedastic, we can report that variance among health professionals was 73% in comparison with general population.

Table 4

*Estimates of the final model for fears of self-compassion*

|  |  |  |  |
| --- | --- | --- | --- |
| **Fixed effects** | **β (SE)** | ***p*-value** |  |
| Intercept | 20.66 (0.80) | .0000 |  |
| time2 | -1.24 (0.32) | .0001 |  |
| time3 | -1.11 (0.34) | .0012 |  |
| Age | -0.14 (0.01) |  .0000 |  |
| Gender | -1.62 (0.40) |  .0001 |  |
| health-professionals | -2.70 (0.35) | .0000 |  |
| compassion-training | -3.82 (0.34) | .0000 |  |
| time2:health-professionals | 1.01 (0.45) | .0238 |  |
| time3:health-professionals | 1.41 (0.48) |  .0035 |  |
| **Variance components** | **σ2** | **effect size** | **autocorrelation** |
| Respondents | 68.89 |  |  |
| Countries | 4.93 |  |  |
| Residuals | 37.09 |  |  |
| R2 |  | 0.33 |  |

Figure 1: Interaction effects in the final model for fears of self-compassion



Fear of compassion for others (Table 5) did not change in time 2, but it did decrease significantly in time 3. Older respondents showed significantly less fear of compassion for others than younger respondents, and so did women in comparison to men. Health professionals and respondents with compassion training had significantly less fear of compassion for others than general population. As can be seen in Figure 2, fear of compassion for others among health professionals significantly decreased in time, although these fears were low at time 1 (baseline), and fluctuate with an increase in fears of compassion for others at time 2 and a slight decrease at time 3. Since our final model was heteroscedastic, we can report that variance among health professionals was 77% in comparison with the general population.

Table 5

*Estimates of the final model for fears of compassion for others*

|  |  |  |  |
| --- | --- | --- | --- |
| **Fixed effects** | **β (SE)** | ***p*-value** |  |
| intercept | 18.56(0.85) | .0000 |  |
| time2 | -0.21(0.24) | .3791 |  |
| time3 | -1.02 (0.28) | .0003 |  |
| age | -0.05(0.01) |  .0000 |  |
| gender | -1.52(0.29) |  .0000 |  |
| health-professionals | -2.39(0.25) | .0000 |  |
| compassion-training | -3.94(0.24) | .0000 |  |
| time2:health-professionals | 0.76(0.35) | .0285 |  |
| time3:health-professionals | 1.33(0.41) |  .0011 |  |
| **Variance components** | **σ2** | **effect size** | **autocorrelation** |
| respondents | 18.75 |  |  |
| countries | 11.02 |  |  |
| residuals | 29.16 |  |  |
| φ |  |  | 0.40 |
| R2 |  | 0.34 |  |

Figure 2: Interaction effects in the final model for fears of compassion for others



We can see that fear of compassion from others (Table 6) did not show any significant change over time. Older respondents showed significantly less fear of compassion from others than younger respondents, and so did women in comparison to men. Health professionals and respondents with compassion training had significantly less fear of compassion from others than the general population. Since there was no significant change over time, that there were no significant interaction effects .

Table 6

*Estimates of the final model for fears of compassion from others*

|  |  |  |  |
| --- | --- | --- | --- |
| **Fixed effects** | **β (SE)** | ***p*-value** |  |
| intercept | 19.98(0.77) | .0000 |  |
| time2 | -0.25(0.21) | .2154 |  |
| time3 | -0.37(0.22) | .0915 |  |
| age | -0.13(0.01) |  .0000 |  |
| gender | -1.24(0.35) |  .0004 |  |
| health-professionals | -2.12(0.30) | .0000 |  |
| compassion-training  | -2.00(0.30) | .0000 |  |
| **Variance components** | **σ2** | **effect size** | **autocorrelation** |
| respondents | 49.98 |  |  |
| countries | 6.25 |  |  |
| residuals | 30.25 |  |  |
| R2 |  | 0.33 |  |

**Discussion**

The current study examined the natural fluctuation of compassion and fears of compassion in a multinational community sample during the COVID-19 pandemic. Overall, the flows of compassion increased over time, whilst fears of compassion decreased during the pandemic. These results are consistent with previous findings from other major disasters, where social support was found to be linked with increased resilience and post-traumatic growth, and emerged as a key factor for how people cope with adversity (Saltzman et al., 2018; Xu & Ou, 2014).

Specifically, for the whole sample, results revealed that self-compassion increased at time 3, compassion for others increased at time 2 and 3, and compassion received from others significantly increased at time 3. Whilst previous studies have not looked at changes in compassion over time in the long-term, short-term studies exploring the temporal stability of compassion self-report measures have documented that the flows of compassion seem to be relatively stable over time (e.g., Gilbert et al., 2017; Matos et al., 2021c; Medvedev et al., 2020). However, compassion is known to be malleable and with psychophysiological plasticity, meaning that compassion training can produce changes in the neural networks associated with threat processing, positive emotions and emotion regulation (Förster & Kanske, 2021; Singer & Engert, 2019; Weng et al., 2013; Weng et al., 2018), and compassion can be improved with compassion interventions (e.g., Basran et al, 2022; Kirby et al., 2017). Compassion emerged from the mammalian care-giving system algorithm for caring, where if a stimulus indicates distress or need, then this activates behaviours to alleviate them (Gilbert, 2020). So, in a time of elevated distress and shared human suffering (i.e., the pandemic) there may be more opportunities for individuals to be sensitive to and engage with suffering (in self and others), and to try to address that suffering with compassionate action. Thus, it seems that during the pandemic there was a natural tendency for individuals to become more able to engage with their own and others suffering and act in more compassionate ways towards themselves and others, while also becoming increasingly open to receiving compassion from other people.

In regard to inhibitors of compassion, fears of self-compassion reduced over time, fears of compassion for others significantly decreased in time 3, whilst fears of receiving compassion from others did not significantly change over time. Notwithstanding the scarcity of previous studies examining changes in fears of compassion over time, intervention studies have documented that fears, blocks and resistances to compassion decrease as a result of brief (Matos et al., 2017; Sommers-Spijkerman et al., 2020) and longer compassion focused interventions (Irons & Maitland, 2020; Matos et al., 2022), and that these improvements are maintained over time (Irons & Heriot-Maitland, 2020; Matos et al., 2022). These results suggest that, in the context of a major life disruptor event (i.e., the pandemic), inhibitors of compassion seem to diminish in the face of greater opportunities to express compassion.

When interpreting the results, it is important to note that baseline levels of compassion were already elevated in comparison to normative data prior to the pandemic (Gilbert et al., 2017), whereas levels of fears of compassion were lower at baseline (Gilbert et al., 2011). Despite these higher levels of compassion at baseline, participants still showed significant increases across time; and despite lower fears of compassion at baseline, these still tended to further decrease across the pandemic. This provides evidence of a cumulative improvement in compassion and reduction in fears of compassion over the course of the pandemic, and suggests that, when there is intense suffering, people seem to become more compassionate and less afraid of and resistant to compassion. This might also be related to the specificity of the pandemic threat, which like other large-scale tragedies, seems to activate a compassionate motivation to care for others and for oneself. At the same time, the public messages at the beginning of the pandemic were very focused on caring and protecting others and oneself.

In terms of sociodemographic influences, in self-compassion and compassion from others there were no differences in any sociodemographic variables. Sociodemographic influences were found in terms of compassion for others, which was found to increase in the general population, but in contrast it decreased in health professionals between time 2 and time 3. This could potentially be related to elevated burnout and compassionate fatigue in healthcare workers as the pandemic continued (Lluch et al., 2022; Khanjani et al, 2021). It is interesting that this was not true for those who were trained in compassion, who may therefore be more resilient to burnout and compassion fatigue (Eriksson et al., 2018). Compassion for others was also lower amongst older participants, which might be related to having greater vulnerability to COVID-19 and higher threat perception towards others during this period, which could reduce their motivation to be compassionate towards others. There were no significant difference between women and men, which is in contrast with a prior longitudinal study showing that women had significantly higher levels of compassion towards others than men across seven years (Lee et al., 2021).

In terms of sociodemographic influences on fears of compassion, across all the flows of fears of compassion (i.e., for self, from others and for others), health professionals, respondents with compassion training, older respondents and women had significantly less fear of self-compassion than the general population. Several studies have found that health professionals engaging with compassion training showed reduced fears of compassion (McVicar et al, 2020; Scarlet et al, 2020). The finding that older respondents and women had fewer fears of compassion is consistent with clinician observations of patients undergoing compassion focused therapies (McEwan & Minou, 2022).

To summarize, there were no influences of sociodemographics on compassion, apart from healthcare professionals and older adults showing reductions in compassion for others as the pandemic progressed. Fears of compassion were lowered in healthcare professionals, those with compassion training, older adults and women.

**Limitations and future directions**

 A limitation of the current study pertains to the dropout rate across time. While dropouts are to be expected in a study with a longitudinal design and where the multiple measurements generally coincided with peaks in pandemic cases and associated lockdown measures, this raises the question of whether there were differences between participants who dropped out from those who remained in the study. For example, it may be that participants who remained in the study were those more prone to be compassionate and to be less fearful of compassion. In the future, research could explore differences between these participants in baseline levels of compassion and fears of compassion and also in indicators of psychological distress, as these may influence the activation of compassionate and caring motivational systems. Furthermore, there was an uneven gender distribution in this study, with more respondents identifying as women. Although no gender differences have been reported in the self-compassion and compassion from others scales, women have been found to score higher than men in compassion towards others (Gilbert et al., 2017; Lee et al., 2021). Thus, future studies should seek to recruit more gender balanced samples.

 Differences across the 21 countries in terms of rates of COVID-19 and the timing of peaks of infection and associated lockdown measures may have affected the levels of compassion and fears of compassion. Additionally, previous studies have reported cross-cultural differences in the compassion flows (e.g., Steindl et al., 2020) and it is possible that the type of strategies implemented by different countries to limit the spread of the virus across the of the pandemic waves might have influenced the fluctuation in the flows of compassion and fears of compassion. Nevertheless, a key strength of the current study was the multivariate multilevel methodology used and the consistency of the effects across all 21 countries, thus supporting the universality of the cumulative improvement in compassion and fears of compassion over the course of the pandemic.

 In light of the current findings, it would be pertinent for future research to explore other variables that might play a role in explaining the increases in the flows of compassion and decreases in fears of compassion across time, and to map how these changes relate to changes in other variables related to perceived threat of COVID-19, psychological distress, trauma and social connection. In fact, this study is part of an ongoing broader multinational project that aims to prospectively investigate the buffering effects of compassion and fears of compassion throughout the pandemic.

**Conclusion**

This study assessed the natural fluctuation of compassion and fears of compassion in a multinational community sample across 10 months during the pandemic. Compassion increased, whilst fears of compassion decreased during the pandemic, consistent with previous findings from major disasters, where forms of social support become a main resource for coping. It is likely that the pandemic, a time of elevated distress and shared human suffering, provided more opportunities for people to respond to distress with compassion. In addition, during the pandemic messages received from Governments and Public Health organizations were much about caring for each other. Sociodemographic variables influenced these fluctuations in compassion, with healthcare professionals and older adults showing less compassion for others as the pandemic progressed, possibly due to burnout or increased vulnerability to contagion. Whilst in terms of fears of compassion, fears were lower in healthcare professionals, those with compassion training, older adults and women. Compassion is known to have plasticity and can be trained, hence engaging with compassion interventions could offer a resource for coping during large-scale uncontrollable events. This could be particularly relevant for healthcare professionals, as a way of promoting emotional regulation and compassionate skills whilst reducing burnout and compassionate fatigue, especially in the face of extended major threatening events, such as the pandemic.

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