On the association between socio-demographics and daily moralization during the pandemic

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The COVID-19 pandemic dramatically affected people's lives worldwide and provoked a vast variety of behavioural changes such as social distancing, increased hygiene measures, remote learning and working. Our study explores the association between individual differences based on socio-demographic characteristics such as gender, nationality, country of living, income, and well-being and the moralization of everyday life behaviours during the pandemic. We collected a large cross-cultural and multidimensional data set. By analysing the factor loadings of the moralisation scale using Confirmatory Multidimensional Item Response Theory (IRT) models, we found four distinct moralisation dimensions which were: unnecessary risk-taking, selfish behaviour, failing to do good, health and hygiene. We found no significant associations between socio-demographic variables and these moralisation dimensions. The impact of personality differences, emotional regulation, risk perception and pandemic fatigue on moralization needs to be investigated in future studies.

Moral decision-making, everyday life behaviours, COVID-19, socio-demographic characteristics, moralization, moralization of everyday life scale, adapted MELS

1 Introduction

COVID-19 (Coronavirus disease 2019), a major life-threatening condition which has been declared a global pandemic by the World Health Organization (WHO, 2020), had and continues to have a negative influence on the mental health of people all around the world (Rajkumar, 2020). Research on the negative psychological impacts of the pandemic has stated that the most common symptoms demonstrated were anxiety about getting infected, (Zhang & Ma, 2020) depression and stress (Sun, et al. 2020). Some suggested that despite the adverse effects, the pandemic has created a unique environment to study the effect of exogenous factors such as stress, social isolation, ambiguity and economic challenges on individuals and society (Jeronimus, 2020). Furthermore, individual differences in aspects of socio-demographic characteristics such as age, gender, and mental well-being are expected to be related to how people reacted and still react to daily life situations during the pandemic (Kim et al., 2022).

Studies have shown significant differences in the prevalence of mental health symptoms depending on socio-demographic characteristics during the COVID-19 pandemic. According to Kim et al., (2022), people aged 18-24 years were more likely to experience stress, anxiety, or depression symptoms due to pandemic-related restrictions. Additionally, women were more

likely to develop anxiety symptoms than men. Low-income families were more likely to have difficulties paying for mental health services than high-income families. Finally, individuals of African American, Native American, or low-income backgrounds were more likely to have psychological distress due to COVID-19 and related measures. Therefore, these studies suggest that it is essential to examine socio-demographic variables such as age, sex, race/ethnicity, income, employment status, health insurance status, marital status, and living arrangement, to identify any potential links with pandemic-related behaviours (Brankston, 2021, Zajacova, 2020).

Francis and McNabb (2020) studied the association between moral decision-making and moralization behaviour and individuals' engagement in government-recommended advice. They found no differences related to one's moral code, but the study revealed associations between the pandemic-related behaviours and moralization of non-compliant behaviours, such as failing social distancing. Furthermore, Rivas and Cuadro (2020) demonstrated a binary pathway of the pandemics on decision-making processes, such that altruistic behaviours are promoted if individuals are concerned about others' suffering and if they are contracting the disease. Egoistic behaviour was promoted if people were only concerned about themselves. Additionally, the reaction to framing problems was shown to be automatic if it concerned the self and controlled in caring for others.

We built upon the research of Francis and McNabb (2020) which adopted the moralization of everyday life scale for the early stage of COVID-19. In our study, we revised these behaviours to be in accordance with a later stage of the pandemic and examined whether individual differences in terms of socio-demographic characteristics were associated with moralization about daily behaviours.

1.1 Research question

Is there a significant association between the moralization about everyday life behaviours related to the COVID-19 pandemic and socio-demographic characteristics such as age, gender, nationality, country of living, effect on income and well-being (personal well-being and others' well-being)?

2 Methods

2.1 Data collection

The study was conducted online on the SoSci Survey Platform (Leiner, 2021). Participants' informed consent was taken at the beginning of the survey. N = 209 participants completed the survey between June to September 2022. Only those individuals who finished the survey were taken into account and the rest were discarded. To maintain the anonymity and privacy of the participants, each participant created a pseudonym based on their personal information. Participants were aware of their right to withdraw from the study at any point in time, even after the completion of the survey.

Out of the 209 participants, 53.11% (111) were female, 44.01% (92) were male and 2.89% (6) were others. People from 26 nationalities participated in the survey. 37% of them were Germans (78) and 40.67% of them were of Indian nationality. Individuals from 24 other nationalities constituted the remaining 22.01%. Taking into consideration how the government regulations regarding COVID-19 varied across countries, we also collected data regarding the country of living for each participant. 47.37% (99) of the population lived in Germany during the pandemic, 30.14% (63) lived in India and the rest 22.49% (47) lived in 18 different countries. The average age of the participants was 27 years and the standard deviation was 7.45. The study received ethical approval from the Research Impact Assessment and Ethics Committee of the Carl von Ossietzky Universität Oldenburg.

2.2 Questionnaires and measurement scales

In this study, we used two sets of questionnaires: 1. Socio-demographic questionnaire and 2. Adapted moralisation of everyday life scale (MELS).

Socio-demographic questionnaire

Participants started the survey by answering questions on gender, age, education, nationality, country of living, relationship status, employment, and income. In the context of COVID-19, we also included specific questions regarding the effect of COVID-19 on income, infection history, vaccination, quarantine experience and effect on social life. Self-evaluations of participants' well-being when they contracted COVID-19 were also recorded.

Example question:

"Have you been infected with COVID-19?"

1 = Yes. Tested positive | 2 = Yes. Not tested | 3 = No | 4 = I don't know

Adapted MELS (moralisation of everyday life scale) questionnaire.

MELS was designed to measure variations in people's assignment of moral weight to commonplace behaviours. Internal consistency of the MELS was found to be 0.93 by Lovett,

Jordan and Wiltermuth (2012). Moralisation of Everyday Life during the COVID-19 Scale (MELS-CV19) was adapted by Francis and McNabb (2021). We further modified it in such a way that it was applicable in June 2022; two years into the pandemic.

The adapted MELS items were rated on a 7-point Likert-type scale ranging from 0 (not wrong at all; a perfectly OK action) to 6 (very wrong; an extremely immoral action), and participants were asked the question - "How morally wrong is this behaviour in your opinion?". There were twenty-one items designed to include four facets - unnecessary risk-taking behaviours, failing to do good to others, selfish actions and behaviours related to health and hygiene.

Example question:

"Cal eats her lunch on the train every time and removes her mask."

-3 = Very wrong | -2 | -1 | 0 = Neutral | +1 | +2 | +3 = Not wrong at all

2.3 Statistical analysis methods

We first cleaned the data by omitting participants who have not completed the survey and re-coded the answers according to the measurement scale. Then, we applied Item Response Theory (IRT) models, also known as latent trait analysis or modern psychometrics to estimate the latent traits measured by the adapted MELS questionnaire. Dimensionality assessment of the scale is completed before fitting the confirmatory model. We use categorical principal component analysis to explore dimensionality. We then pursued an Item Factor Analysis using the mirt package (v1.33.2; Chalmers, 2012) on the R Software for Statistical Computing (v4.2.0; R Core Team 2022). Starting with a one-factor model, we compared models with the increasing number of factors. Model comparison was conducted based on the likelihood ratio test. Additionally, AIC/BIC criteria were evaluated. After establishing the number of factors and the loading pattern, we re-fit the model by a confirmatory multidimensional IRT approach.

3 Results

3.1 Adapted MELS

Verifying the unidimensionality of the adapted MELS was done by using the categorical principal component analysis with the Pincal function of the R/Gifi library (v0.4.0; Mair, 2022). Results clearly revealed multidimensionality (Figure 1). The plot in Figure 1 illustrates that there are more than two factors which have an eigenvalue above 1.0, according to the Kaiser Criterion (Figure 2) the number of factors to be extracted is 4. The four-factor model was found to be best fitting the data, with the lowest maximum likelihood ratio and with the smallest AIC and BIC, as compared with the 3, 2 and 1-factor models.

Before applying confirmatory multidimensional IRT models, we aimed to interpret the four latent variables. In agreement with the hypothesis and the previous literature, we identified four latent traits. We illustrate the factor loadings in Table 1.

Figure 1

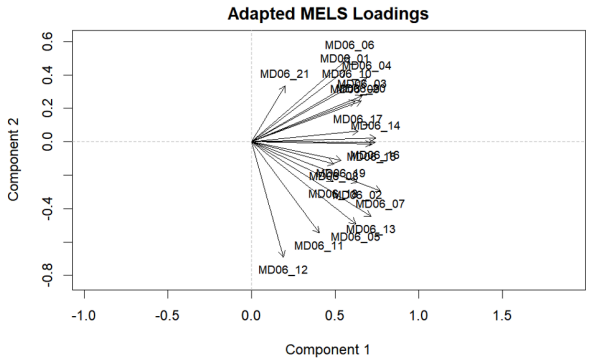


Figure 2

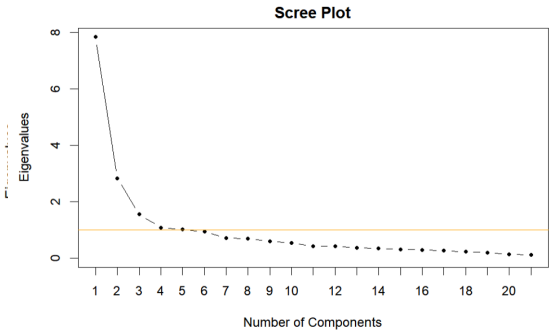


Figure 1: Princals loadings explaining the violation of unidimensionality of items where the arrows point in different directions indicating their non-homogeneous nature. **Figure 2**: Scree plot demonstrating the number of factors to retain. The yellow line indicates the Kaiser criterion i.e. eigenvalue of 1.

Confirmatory multidimensional IRT model

For items having factor loadings below 0.4, the content-wise similarity is taken into consideration as the criteria to define which items correspond to which latent variables. Thereupon, the four factors were defined as unnecessary risk-taking (urt), selfish behaviour (sb), failing to do good (fdg) and health and hygiene (hh).

Table 1: Factor Analysis of Adapted MELS by IRT Model

No.	Item	urt	sb	fdg	hh
1	Anna throws a house party and invites many friends over without asking them to do a COVID-19 Screening test.	**.67**	-.07	-.00	-.03
3	Emma is travelling using public transport every day but doesn't wear a mask.	**.66**	.08	-.02	.06
20	Kirti is unvaccinated and decides to travel across Europe for 2 months.	**.60**	.16	.24	-.16
10	Cal eats her lunch on the train every time and removes her mask.	**.60**	-.01	-.04	.08
6	Daniela sees a friend while out on a walk and greets them by kissing her on the cheek / shaking their hand.	**.46**	-.28	-.04	.37
9	Ram prefers to sit on a busy seat than an empty seat on the train.	**.31**	.034	.12	.34
12	During the lockdown, Iman is buying toilet rolls and other household items in bulk.	-.01	**.83**	-.04	-.02
11	During the lockdown, Niklas is buying perishable groceries that he does not need/cannot use before they expire.	-.01	**.63**	.06	.19
8	Jennifer goes to buy groceries/essential items while she is self-isolating.	.32	**.33**	.01	.09
7	James is travelling to his place of work even with cold-like symptoms when he could be working from home.	.39	**.25**	.14	.29
19	Yamini is not offering to collect an elderly person's medical prescription.	-.01	-.07	**.98**	.01
18	Mathias is not offering to pick up groceries for a neighbour who is self-isolating after showing symptoms.	-.01	.05	**.82**	.02
14	Dimitris is not washing his hands when he comes home.	-.04	-.01	.10	**.87**
13	Michelle is coughing without covering her mouth in a public space.	-.05	.23	.08	**.71**
17	Olivia has tested positive, but she is not informing her GP / doctor about it.	.12	.12	.03	**.52**
04	Pablo is using a public gym that is not regularly disinfected.	.40	-.20	-.02	**.51**
15	Malte is leaving her home despite feeling unwell.	.19	.08	.16	**.50**
16	Lara is visiting her friend who has a high temperature and persistent cough.	.25	.21	.06	**.42**
2	Even though his Corona-App has a warning, Justin is visiting his 80-year-old grandparents.	.27	.02	-.02	**.39**
5	Feliz is unvaccinated and spreads false information on social media.	.20	.45	.04	**.34**
21	Okan, the bus driver, doesn't let a mother with a child inside, as she wasn't wearing an N95 mask.	.18	.02	.05	-.03

The confirmatory model fitted the data well. The fit of the model is validated using the M2-type statistic (Maydeu-Olivares & Joe, 2006) where we found the p-value to be significant ($p<0.05$). RMSEA (with a 90% confidence interval) was 0.067, TLI was 0.788 and CFI was 0.849. We then computed factor scores using the maximum a-posteriori (MAP) method. These will be used for associating individual differences in the MELS facets with socio-demographic groups.

Unnecessary risk-taking (urt)

The first 5 items have been loaded into this factor whereas item 9 is allocated to this factor given its theoretical fit, even if the loading was slightly below 0.40. All items loaded onto this factor require evaluations of actions which cause more harm than good. Examples: Throwing a house party without testing the attendees, using public transport without wearing a mask

or getting in contact with people when it could have been avoided easily. The empirical (marginal) reliability of this factor was 0.87.

Selfish behaviour (sb)

These items indicate individuals' selfish behaviours. The dilemma benefits the individual but affects society negatively. Examples: Hoarding essential supplies like groceries and toilet paper, choosing not to self-isolate just to maintain the normalcy of life. Even though item 8 and item 7 have lower loadings, we grouped them under selfish behaviour based on their theoretical fit indicating situation benefits the individual more than the benefit of others. Empirical (marginal) reliability was 0.89.

Failing to do good (fdg)

The items in this factor are describing situations of rejecting the opportunity to help those in need, ergo people are failing to do good to others. Example: Not offering to collect an elderly person's medical prescription, refusing to pick up groceries for the neighbour who is self-isolating because of COVID-19 infection. All the items are loaded onto the factor with loading >0.8 and the empirical (marginal) reliability was very good as well, amounting to 0.89.

Health and hygiene (hh)

The items loaded onto the fourth factor are dilemmas regarding health and hygiene. Items related to reporting doctors in case of sickness, being unvaccinated and spreading false information, and visiting a friend despite having a high-temperature fall under the category of health-related dilemmas. Items related to not washing hands and using public gyms that are not disinfected can be grouped as personal hygiene items. The empirical (marginal) reliability was high, with 0.91. Item 21 was removed from the model as it did not load significantly into any of the factors.

3.2 Association between socio-demographic and moralization scores

The comparisons across socio-demographic groups are displayed as violin plots in Figures 3-8. The x-axis represents the moralization dimensions which are fdg – failing to do good; hh – health and hygiene; sb – selfish behaviour; urt – unnecessary risk-taking, respectively. The y-axis shows the factor scores of each moralization dimension corresponding to the socio-demographic group.

The socio-demographic groups were differentiated as follows. Gender was split into males vs. females in Figure 3. The nationality and the country of living are grouped as German, Indian and Other in Figure 4 and Figure 5, respectively.

Figure 3

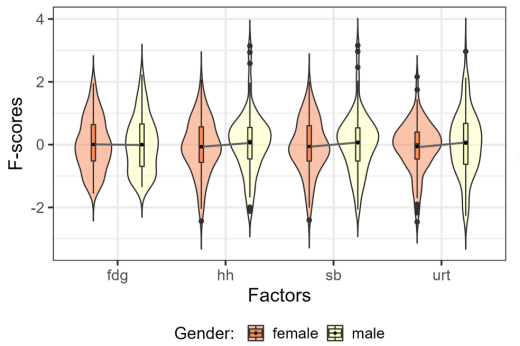


Figure 4

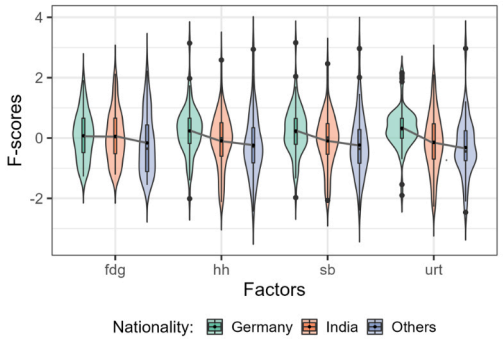


Figure 5

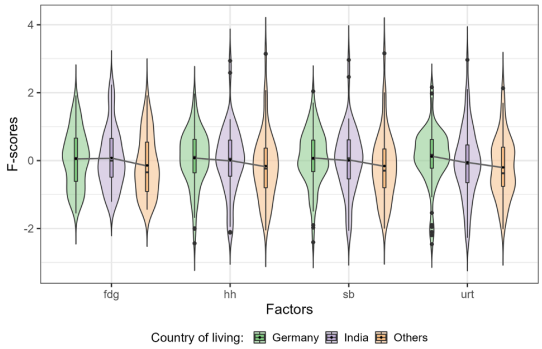


Figure 6

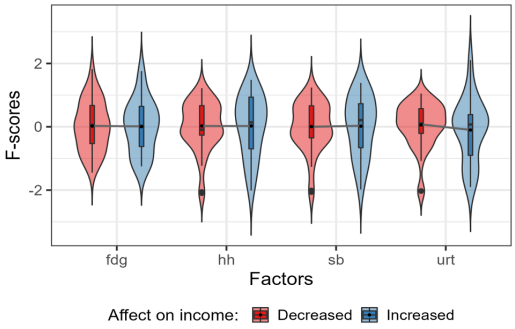


Figure 7

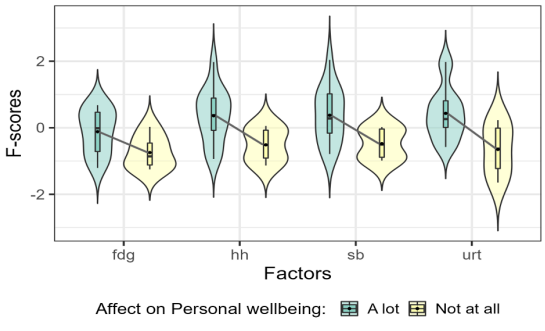
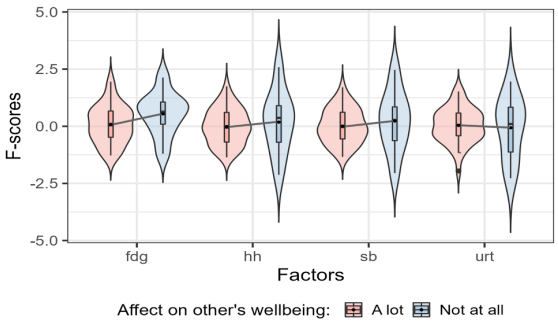


Figure 8



Violin Plots *- Violin plots displaying the distribution for socio-demographic groups comparing four moralization dimensions: fdg – failing to do good; hh – health and hygiene; sb – selfish behaviour; urt – unnecessary risk-taking. Each panel shows the association between moralization dimensions and distinct socio-demographic characteristics:* ***Figure 3:*** *gender,* ***Figure 4:*** *nationality,* ***Figure 5:*** *country of living,* ***Figure 6:*** *effect on income,* ***Figure 7:*** *Pandemic's impact on Personal well-being and* ***Figure 8:*** *Pandemic's impact on Other's Wellbeing.*

In Figure 6, the grouping is based on income decreased v/s increased during the pandemic. Figures 7 and 8 are describing how people's well-being and if they were infected with COVID-19 was associated with the moralization factors. Figure 7 was segregated based on how personal well-being was affected when sick. Figure 8 is grouped based on how others' well-being was affected. The two groups are – well-being got affected a lot v/s not affected at all. Statistical comparisons of these groups regarding the outcome variables fdg, hh, sb and urt moralization dimensions and the violin plots demonstrate no significant differences in moralization dimensions across socio-demographic characteristics.

4 Discussion

We found four distinct dimensions of moralization in daily life to be measured by the adapted MELS. These are unnecessary risk-taking, selfish behaviour, failing to do good, and health and hygiene. These were in line with the previous literature (Francis and McNabb, 2020). Even though the empirical (marginal) reliability was sufficiently high for all factors, future analyses need to further inspect the inter-item correlation, and internal consistency of the factors as many items are loaded into multiple factors. The grouping of items into the factors has been done by considering statistical and theoretical fit. Fixing an appropriate cut-off threshold for factor loadings and eliminating those items with low or multiple loadings might improve the model fit. We will explore further factorial solutions with different item inclusion criteria in the future.

Further, we investigated whether socio-demographics are associated with moralization. Based on the available sample and these first analyses, we conclude no significant association between moralization in daily life and socio-demographic characteristics such as age, gender, nationality, country of living, effect on income, pandemic's impact on personal well-being and others' well-being. This is partly diverging from what has been reported in the literature before. This may be due to addressing various aspects of behavioural changes provoked by COVID-19. Kim et al., 2022 demonstrated that the frequency of mental health symptoms such as depression, anxiety and stress due to pandemic-related restrictions significantly vary with the socio-demographic characteristics. Brankston et al., (2021) showed that compliance with public health measures and preparedness during COVID-19 are varied among socio-demographic groups. There is very little publication on how the moralization of pandemic-related behaviours is affected by socio-demographics. Francis and McNabb (2020) investigated the relationship between moral decision-making and moralization behaviour, as well as individuals' adherence to government-recommended measures, and found that people seem to have moralized antisocial and noncompliant behaviours during the pandemic, such as failing to socially isolate themselves. However, this study also discussed a surprising result, there was no significant association between moralization and having close experience with COVID-19 (individuals or people from their social circle reportedly got infected by COVID-19.) and it was concluded that there were no differences in one's moral code due to pandemic. This positively aligns with our findings that socio-demographic variables

are not differentiated with respect to the moralization of everyday life behaviours and further predictors need to be studied.

Additionally, our data consists of not only socio-demographics but also the scales to determine individual differences which are personality dimensions, risk perception, emotional regulation and pandemic fatigue. We will further explore the association of moralization with current practising behaviours on the above-mentioned personality traits.

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