**When social exclusion is mandated:
COVID-19, social distancing, gender and psychological needs**

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Abstract

In light of evidence from ostracism research, social distancing to limit the spread of COVID-19 poses a unique psychological challenge. In a German (N=546) and a US (N=199) sample, we examined how different degrees of social distancing impact outcomes related to social exclusion, measuring self-related needs: self-esteem, belonging, control, and meaning. Across both samples social distancing was associated with decreased need fulfillment. German participants reported higher need fulfillment compared to American participants. In comparison to previous studies, self-related needs associated with social distancing were less impacted than under experimental manipulations of social exclusion, however more so than under the baseline condition of inclusion. Working while social distancing was associated with greater need fulfillment, as was identifying as male. Women reported lower need fulfillment in both samples and this difference was mediated by need to belong. Results are discussed in terms of understanding self-related needs in different contexts of exclusion.

Statement of relevance

As social animals, we constantly monitor, if others are approaching and including us, or if we are being excluded, ignored or rejected. This preoccupation with being positively acknowledged serves us well in the complex social environment of human societies. However, as societies are collectively trying to stop the spread of COVID-19 by mandating social distancing behaviors, our need to receive positive social attention to quell fears of exclusion, cannot be fully met. Here we examined – in the US and Germany – how the degree of social distancing relates to people's psychological wellbeing comparing it to laboratory experiments of social exclusion. Overall, social distancing negatively affected basic psychological need fulfillment, especially for those not working, and for women. The findings give insight into the psychological cost of social

distancing measures, and into context variables to mitigate such cost. They also point to new questions regarding self-isolation behaviors more generally.

When social exclusion is mandated: COVID-19, social distancing, and psychological needs

Our need to be with others is closely tied to human cultural-evolutionary history and at the basis of how societies operate. Consequently, we are sensitive to even small indications of ostracism (Spoor & Williams, 2007). Since the outbreak of COVID-19, people were advised or required to restrict social contact to limit the spread of the virus in many regions of the world for extended time periods. In other words, people were mandated to exclude themselves and others from socializing for a public health reason. When we are isolated from others, although to none of our fault and for valid reasons, we may still experience the psychological fall-out of ostracism: decreases in self-esteem, belonging, control, and meaning. Under normal circumstances the experienced distress serves a purpose, allowing us to attend to future threats of ostracism, however during a pandemic it might add to the prevailing uncertainty and anxiety (Brooks, et al. 2020; Sher, 2020,). The present research examines – in a social exclusion framework – the psychological impact of social distancing measures in Germany and the US.

Social distancing

Social distancing describes behavioral norms of avoiding close contact with others as prescribed by public health guidelines to prevent the spread of infectious diseases. Social distancing as a set of measures during the COVID-19 pandemic, involves keeping a distance of 1.5 meters from non-household contacts, keeping interactions to a minimum, avoiding large gatherings, and leaving the house only for essential activities (e.g. groceries; CDC, 2020, July 29).

While the physical aspect of social distancing is largely the same for those abiding by the prescribed norms and varies only in terms of household size (living alone versus with others), the psychological aspect can vary greatly in the extent to which people engage in technologically

mediated interaction. People working while social distancing are likely to have more frequent interactions with others at the workplace or – when working from home – in phone calls and video conferences, as well as through email and team software chats.

Social exclusion and fundamental self-related needs

Social exclusion as a threat to the self, manifests in the feeling that something in the environment or the person might impair positive outcomes, a kind of psychological distress (Williams, 2007). Lowered fulfillment in four self-related psychological needs has consistently been associated with the stressful experience of ostracism (e.g. Zadro, et al., 2004): belonging, control, self-esteem, and meaning.

More generally, these four needs are used as measures of the current state of self to navigate complex social environments (Graupmann, 2018; Sacchi et al., 2020). Self-related need fulfillment indicates how threatened versus safe a person feels in terms of self-integrity.

Social distancing and self-related needs

Looking at social distancing during COVID-19, i.e. a severe reduction of direct social inclusion cues on a daily basis, we expect that self-related needs will be impacted similarly as under conditions of ostracism. It is, however, important to acknowledge factors mostly absent in COVID-19-related social distancing compared to usually studied ostracism: Social distancing is a chosen normative behavior that does not imply that the excluded person is perceived as a burden to others, as is the case for most instances of ostracism studied in the literature (Wesselmann, et al., 2012). The exclusion that comes with social distancing is not attributed to a failure of meeting social expectations or attractiveness standards. In that sense, social-distancing-type exclusion does not bear threatening self-related information, i.e. cues to the individual that behavior needs to be adjusted to ensure inclusion.

Yet, even exclusion by undesirable others (Gonsalkorale & Williams, 2007), or not receiving eye-contact from computerized faces (Wirth, et al., 2010) leads to lowered need fulfillment. According to the notion of an evolved ostracism detection system (Kerr & Levine, 2008; Spoor & Williams, 2007), this suggests that feelings about the self are impacted even if the exclusion does not allow for clear attributions. In light of these considerations, we expect the impact of social distancing to be noticeable on self-related needs, however likely not to the same extent as an acutely experienced episode of directed ostracism, as studied in standard laboratory experiments using a computerized game (Cyberball [Williams, et al., 2000]) where participants are included or excluded by other players.

The present research: Self-related needs, social distancing, and context

Looking at social distancing in the context of COVID-19 public health measures in the spring of 2020 from a social exclusion perspective, the current research examines self-related need fulfillment (belonging, self-esteem, control, meaning). Our primary hypothesis was that people experience less need fulfillment when they engage in more (no work, no telework) compared to less isolating forms of social distancing. In the same vein, we predicted that the effect of social distancing is comparable to the effects of ostracism manipulations. We further examined how these outcomes relate to culture and gender.

Cross-cultural differences

Cross-cultural research on social exclusion suggests that people in more collectivistic cultures are less impacted by ostracism, partly due to a more interdependently defined sense of self being less threatened by individual level exclusion (Pfundmair, Graupmann, et al. 2015; Uskul & Over, 2017). We therefore expected differences between national-cultural context (Germany-US), in light of the US scoring higher on country-level individualism (IND=91,

Hofstede, et al., 2010) than Germany (IND=67), as well as individual level collectivism explaining variation in how social distancing affects outcomes. Specifically, we predicted Germans and those higher in collectivism to report greater need-fulfillment than Americans and those lower in collectivism.

Pandemic living, gender, and need to belong

In light of observations – echoed in the media (Forbes, 2020, April 1) and in research (Chung & van der Lippe, 2018) – that social distancing related working-from-home arrangements result in unequal distribution of household and childcare work unfavorable to women, we were interested in gender differences. Growing up internalizing female gender roles, women are more prone to forming and maintaining relationships (Gabriel & Gardner 1999). These differences find reflection in how men and women fulfill belongingness needs: women tend to fulfill belongingness needs within more closely knit relationships (family, friends), whereas men tend to fulfill them in larger groups with more collective identities (Baumeister & Sommer, 1997). There is reason to assume that collective identities are maintained more easily remotely than social connections related to closer relationships relying more on one-on-one interactions. In addition, staying at and working from home likely makes traditional role expectations of women facilitating and maintaining relationships more salient. At the same time, these very tasks have become difficult to fulfill, leading us to predict that women would report lower need fulfillment than men under prolonged mandated social distancing.

We tested our predictions in a survey study with a German and a US sample. The study was conducted in accordance with the Declaration of Helsinki guidelines and approved by the IRB of the US university.

Method

Participants

We conducted a power analysis to test the adequacy of our sample size to detect a global effect in a MANOVA with six groups and four response variables (primary hypothesis) using G*Power (Faul et al., 2007). We specified an alpha level of .05, a $1-\beta$ error probability of .95, and a conservative small effect size f^2 of .01. The results suggested a recommended sample size of 774.

US sample

One hundred and ninety-nine undergraduate students (mean age = 20.53, SD = 2.81; 51 men, 146 women, 2 non-binary; 90 European American, 11 African American, 29 Asian, 56 Latino, 13 other) were recruited from an urban Midwestern university's participant pool from 2020-05-05 to 2020-06-05.

German sample

Five hundred and forty-six students and employees of a German university (mean age = 29.38, SD = 13.86; 125 men, 415 women, 4 non-binary; 493 German, 13 mixed-German, 38 other nationality, 2 specified no nationality) volunteered to take part in this study from 2020-04-02 to 2020-04-24.

Materials and Procedure

The study was devised online using Qualtrics (US) and Unipark (Germany). After giving informed consent, participants were asked to respond to a number of questionnaire items regarding need to belong (Leary et al., 2013; ten items; e.g. "I do not like being alone."; $\alpha = .78$) and collectivism (Yoo et al., 2011; six items; e.g. "Individuals should only pursue their goals after considering the welfare of the group."; $\alpha = .84$). Next, participants indicated self-related need fulfillment on a 20-item scale (Jamieson et al. 2010) assessing self-esteem (e.g., "I feel

good about myself”; $\alpha = .85$) control (e.g., “I feel I have control over the course of events”; $\alpha = .75$), belongingness (e.g., “I feel I belong to a group”; $\alpha = .75$), and meaningful existence (e.g., “I feel meaningless”; $\alpha = .80$). Participants responded to all questions on a 5-point scale from 1 (not at all) to 5 (very much). Translated German versions of the scale were used with the German sample.

Participants next responded to items regarding their current COVID-19-related social distancing behaviors, indicating which of six statements best described their social distancing behavior (“Complete quarantine (not leaving the house), not working.”, “Complete quarantine (not leaving the house), working from home.”, “Social distancing [leaving the house for essential errands and/or exercise outdoors], not working.”, “Social distancing [leaving the house for essential errands and/or exercise outdoors], working from home.”, “Social distancing [leaving the house for essential errands and/or exercise outdoors], regular work outside of home.”, “No social distancing measures.”). They also indicated their mean number of personal contacts per day. Finally, participants gave basic demographic information (age, identified gender, race/ethnicity [US], nationality [Germany]).

Results

The study’s raw data are provided as supporting information file.

Social distancing behaviors

In the US sample, 19 participants (9.5%) indicated complete quarantine without working, 8 participants (4.0%) complete quarantine with working from home. A majority of participants reported less rigorous forms of social distancing: 75 participants (37.7%) indicated social distancing without working, 49 participants (24.6%) social distancing with home office, and 44 participants (22.1%) social distancing with regular work outside of home. Only four participants

(2.0%) indicated no social distancing measures. A similar pattern emerged in the German sample. Thirteen participants (2.4%) indicated complete quarantine without working, eight participants (1.5%) complete quarantine with working from home. Also here, a majority of participants reported less rigorous forms of social distancing: 193 participants (35,3%) indicated social distancing without working, 221 participants (40.5%) social distancing with home office, and 108 participants (19.8%) social distancing with regular work outside of home. Only three participants (0.5%) indicated no social distancing measures.

Social distancing measures and need fulfillment

To investigate the effect of social distancing on need fulfillment depending on country, we conducted a 3 (social distancing: without working vs. home office vs. regular work) $\times$ 2 (country: USA vs. Germany) MANOVA on the four needs. Notably, we excluded the other three distancing measures (complete quarantine with and without work, no measures) as only a non-representative minority reported these. For descriptive statistics, see Table 1.

Table 1
Means and standard deviations (in parenthesis) for the main study variables in the social distancing conditions

	Social distancing			Country	
	Without working (<i>n</i> = 268)	Home office (<i>n</i> = 270)	Regular work (<i>n</i> = 152)	USA (<i>n</i> = 168)	Germany (<i>n</i> = 522)
Belonging	3.50 (0.82)	3.73 (0.80)	3.71 (0.77)	3.38 (0.88)	3.72 (0.76)
Self-esteem	3.30 (0.89)	3.45 (0.84)	3.52 (0.80)	3.19 (0.94)	3.48 (0.81)
Control	2.58 (0.78)	2.77 (0.77)	2.73 (0.80)	2.96 (0.80)	2.60 (0.76)
Meaningful existence	3.45 (0.86)	3.69 (0.79)	3.92 (0.73)	3.70 (0.92)	3.63 (0.79)

There was a significant main effect of social distancing, Wilks's $\Lambda = .96$, $F(8,1362) = 3.50$, $p = .001$, $\eta_p^2 = .02$, 95%CI = [.004, .03]. Significant main effects of social distancing were obtained for belonging, $F(2,684) = 3.14$, $p = .044$, $\eta_p^2 = .01$, 95%CI = [.00, .03], self-esteem,

$F(2,684) = 3.26, p = .039, \eta_p^2 = .01, 95\%CI = [.00, .03]$, and meaningful existence, $F(2,684) = 11.06, p < .001, \eta_p^2 = .03, 95\%CI = [.01, .06]$. LSD post-hoc comparisons showed that social distancing without working was associated with less feelings of belonging, self-esteem and meaningful existence than social distancing with home office, $ps \leq .033$, and compared to social distancing with regular work outside of home, $ps \leq .010$. Whereas the latter did not differ for belonging and self-esteem, $ps \geq .438$, social distancing with home office induced less feelings of meaningful existence than social distancing with regular work outside of home, $p < .001$. There also was a significant main effect of country, Wilks's $\Lambda = .85, F(4,681) = 29.96, p < .001, \eta_p^2 = .15, 95\%CI = [.10, .19]$. Significant main effects of country were obtained for belonging, $F(1,684) = 21.04, p < .001, \eta_p^2 = .03, 95\%CI = [.01, .06]$, self-esteem, $F(1,684) = 13.36, p < .001, \eta_p^2 = .02, 95\%CI = [.004, .04]$, and control, $F(1,684) = 28.28, p < .001, \eta_p^2 = .04, 95\%CI = [.02, .07]$. Germans indicated more feelings of belonging and self-esteem, however, less feelings of control than Americans. There was no significant interaction effect, Wilks's $\Lambda = .99, F(8,1362) = 1.30, p = .241, \eta_p^2 = .01, 95\%CI = [.00, .01]$.¹

To investigate the effect of social distancing on fulfillment of self-related needs in relation to collectivism, we conducted a moderated regression analysis using the Process tool (Hayes, 2013; model 1). We entered the three kinds of social distancing and collectivism (standardized) as independent variables, and the combined index of all four needs served as the dependent variable. The model revealed significant main effects of social distancing without working vs. social distancing with home office ($X1$), $b = .20, SE = .06, t(684) = 3.47, p < .001$,

¹ To control the results for personal contacts, we conducted the 3 (social distancing) $\times$ 2 (country) MANOVA on the four needs including number of personal contacts as covariate. Significant main effects of social distancing and of country emerged, $ps \leq .001$, but no interaction effect, $p = .330$. The univariate main effects revealed a similar pattern as without the covariate, however, the univariate main effects of social distancing for belonging and self-esteem were reduced to marginal significance, $p = .051$ and $.054$.

95%CI = [.09, .32], and social distancing without working vs. social distancing with regular work (X2), $b = .25$, $SE = .07$, $t(684) = 3.69$, $p < .001$, 95%CI = [.12, .39]: Social distancing without working was associated with less need fulfillment than social distancing with home office and with regular work outside of home. However, the model showed no other significant effects: Neither a main effect of collectivism, $b = .04$, $SE = .04$, $t(684) = 0.98$, $p = .330$, 95%CI = [-.04, .12], nor interaction effects of X1 with collectivism, $b = -.04$, $SE = .06$, $t(684) = -0.67$, $p = .501$, 95%CI = [-.16, .08], or of X2 with collectivism, $b = -.13$, $SE = .07$, $t(684) = -1.88$, $p = .061$, 95%CI = [-.26, .01], emerged.

Comparison with experimental manipulations of exclusion and inclusion

To investigate how need satisfaction during COVID-19 differed from need satisfaction during experimental manipulations of exclusion and inclusion (pre-COVID-19) depending on country, we conducted a 3 (condition: COVID-19 vs. exclusion vs. inclusion) $\times$ 2 (country: USA vs. Germany) MANOVA on the four needs. For the exclusion and inclusion condition, we used an existing pre-COVID-19 cross-cultural data set using a standard (Cyberball [Williams, et al., 2000]) exclusion manipulation (published in Pfundmair & Wetherell [2019; Studies 1 and 2]). Since different scales had been used, we standardized the dependent variables.

There was a significant main effect of condition, Wilks's $\Lambda = .74$, $F(8,1826) = 36.78$, $p < .001$, $\eta_p^2 = .14$, 95%CI = [.11, .16]. Significant main effects of condition were obtained for belonging, $F(2,916) = 132.28$, $p < .001$, $\eta_p^2 = .22$, 95%CI = [.18, .27], self-esteem, $F(2,916) = 56.05$, $p < .001$, $\eta_p^2 = .11$, 95%CI = [.07, .15], control, $F(2,916) = 86.68$, $p < .001$, $\eta_p^2 = .16$, 95%CI = [.12, .20], and meaningful existence, $F(2,916) = 61.53$, $p < .001$, $\eta_p^2 = .12$, 95%CI = [.08, .16]. LSD post-hoc comparisons showed that, during COVID-19, participants reported greater feelings of belonging, self-esteem, control and meaningful existence than participants

who were experimentally excluded, $ps < .001$. However, they also reported less feelings of belonging, self-esteem, control and meaningful existence than participants who were experimentally included, $ps < .001$. Also in this analysis a main effect of country emerged, Wilks's $\Lambda = .98$, $F(4,913) = 3.99$, $p = .003$, $\eta_p^2 = .02$, $95\%CI = [.002, .03]$. Significant main effects of country were obtained for belonging, $F(1,916) = 8.82$, $p = .003$, $\eta_p^2 = .01$, $95\%CI = [.001, .03]$, and self-esteem, $F(1,916) = 4.47$, $p = .035$, $\eta_p^2 = .005$, $95\%CI = [.00, .02]$: Americans reported lower self-esteem and sense of belonging overall compared to Germans. Interestingly, these country effects were qualified by a significant interaction with condition, Wilks's $\Lambda = .94$, $F(8,1826) = 7.10$, $p < .001$, $\eta_p^2 = .03$, $95\%CI = [.01, .04]$. Significant interaction effects were obtained for belonging, $F(2,916) = 3.77$, $p = .023$, $\eta_p^2 = .01$, $95\%CI = [.00, .02]$, self-esteem, $F(2,916) = 4.05$, $p = .018$, $\eta_p^2 = .01$, $95\%CI = [.00, .02]$, and control, $F(2,916) = 8.71$, $p < .001$, $\eta_p^2 = .02$, $95\%CI = [.005, .04]$. Simple main effect analyses showed that Germans and Americans did not differ in the inclusion condition, $ps \geq .272$. However, in the exclusion condition, Germans reported higher levels of belonging, self-esteem and control than Americans, $ps \leq .020$. Similarly, during COVID-19, Germans reported higher levels of belonging and self-esteem than Americans but lower levels of control, $ps < .001$, see Figure 1.

Figure 1. Comparison of need satisfaction during COVID-19 with experimental manipulations of exclusion and inclusion.

Effect of gender

To investigate the effect of gender on fulfillment of self-related needs by country, we conducted a 2 (gender: male vs. female) $\times$ 2 (country: USA vs. Germany) MANOVA on the four needs. Notably, we excluded six participants who had indicated a non-binary gender. For descriptive statistics, see Table 2.

Table 2

Standardized means and standard deviations (in parentheses) for the main study variables

	COVID-19		Pre-COVID-19	
	Male (<i>n</i> = 176)	Female (<i>n</i> = 561)	Male (<i>n</i> = 66)	Female (<i>n</i> = 110)
Belonging	0.07 (0.64)	-0.03 (0.73)	0.05 (0.92)	-0.04 (0.96)
Self-esteem	0.13 (0.73)	-0.04 (0.81)	0.07 (0.85)	-0.05 (0.92)
Control	0.23 (0.68)	-0.08 (0.70)	0.12 (0.96)	-0.09 (0.86)
Meaningful existence	0.12 (0.65)	-0.04 (0.77)	0.10 (0.86)	-0.07 (0.97)

There was a significant main effect of gender, Wilks's $\Lambda = .97$, $F(4,730) = 5.59$, $p < .001$, $\eta_p^2 = .03$, 95%CI = [.01, .05]. Significant main effects of gender were obtained for belonging, $F(1,733) = 5.97$, $p = .015$, $\eta_p^2 = .01$, 95%CI = [.00, .03], self-esteem, $F(1,733) = 5.00$, $p = .026$, $\eta_p^2 = .01$, 95%CI = [.00, .02], control, $F(1,733) = 21.63$, $p < .001$, $\eta_p^2 = .03$, 95%CI = [.01, .06], and meaningful existence, $F(1,733) = 5.35$, $p = .021$, $\eta_p^2 = .01$, 95%CI = [.00, .02]. Specifically, female identified participants indicated lower levels of belonging, self-esteem, control, and meaningful existence than male identified participants. The known main effect of country reemerged, Wilks's $\Lambda = .87$, $F(4,730) = 26.81$, $p < .001$, $\eta_p^2 = .13$, 95%CI = [.08, .17]. Significant main effects of country were obtained for belonging, $F(1,733) = 16.91$, $p < .001$, $\eta_p^2 = .02$, 95%CI = [.01, .05], self-esteem, $F(1,733) = 17.68$, $p < .001$, $\eta_p^2 = .02$, 95%CI = [.01, .05], and control, $F(1,733) = 22.51$, $p < .001$, $\eta_p^2 = .03$, 95%CI = [.01, .06]: Americans showed higher sense of control, but lower self-esteem and sense of belonging overall compared to Germans. No significant interaction emerged, Wilks's $\Lambda = .99$, $F(4,730) = 2.37$, $p = .051$, $\eta_p^2 = .01$, 95%CI = [.00, .03].²

² Again, we controlled for personal contacts by re-conducting the 3 (social distancing) $\times$ 2 (gender) MANOVA on the four needs, however, including number of personal contacts as covariate. Significant main effects of gender and of country emerged, $ps \leq .001$, as well as a significant interaction effect, $p = .042$. The univariate main effects revealed similar pattern than without the covariate and, similar to the pattern before, the univariate interaction effects obtained no significance, $ps \geq .112$.

To explore whether need to belong mediated the relationship between gender and fulfillment of self-related needs, we conducted a mediation analysis using the Process tool by Hayes (2013; model 4, 5000 bootstrap samples). As dependent variable, we used the combined index of all four needs. The total effect was significant, $b = -.21$, $SE = .06$, $t(735) = -3.57$, $p < .001$, 95%CI = $[-.33, -.09]$, indicating less need fulfillment among female participants. The indirect effect of gender on need fulfillment was statistically different from zero as evidenced by a bootstrap confidence interval that did not contain zero, $b = -.07$, $SE = .02$, 95% CI = $[-.11, -.03]$. The direct effect gender on need fulfillment of was still significant when chronic need to belong was included as a mediator, $b = -.14$, $SE = .06$, $t(735) = -2.55$, $p = .011$, 95%CI = $[-.26, -.03]$, indicating a partial mediation: Women indicated a higher need to belong than men and this translated into less need fulfillment, see Figure 2.³

Figure 2. Results of the mediation analysis: During COVID-19, women indicated a higher need to belong and this translated into less need satisfaction (black). Pre-COVID-19, women indicated a higher need to belong, however, this did not translate into less need satisfaction (grey).

³ The same pattern of results emerged, when including number of personal contacts as covariate into this mediation analysis.

To check whether such a gender effect was present even before COVID-19, we ran a 2 (gender: male vs. female) $\times$ 2 (country: USA vs. Germany) MANOVA on the four needs in the existing pre-COVID-19 cross-cultural data set (published in Pfundmair & Wetherell [2019; Studies 1 and 2]). All dependent variables were standardized to ensure comparability.

There was neither a main effect of gender, Wilks's $\Lambda = .97$, $F(4,169) = 1.31$, $p = .268$, $\eta_p^2 = .03$, 95%CI = [.00, .07], nor of country, Wilks's $\Lambda = 1.00$, $F(4,169) = 0.22$, $p = .930$, $\eta_p^2 = .01$, 95%CI = [.00, .01], nor an interaction effect, Wilks's $\Lambda = .97$, $F(4,169) = 1.25$, $p = .292$, $\eta_p^2 = .03$, 95%CI = [.00, .07]⁴.

In the pre-COVID-19 sample, we also explored whether need to belong mediated the relationship between gender and need fulfilment, using the same tool. As dependent variable, we used the combined index of all four standardized basic needs; need to belong as the mediator was also standardized. Neither the total effect, $b = -.15$, $SE = .13$, $t(174) = -1.15$, $p = .252$, 95%CI = [-.41, .11], nor the indirect effect, $b = -.04$, $SE = .04$, 95% CI = [-.12, .02], nor the direct effect, $b = -.11$, $SE = .13$, $t(174) = -0.83$, $p = .409$, 95%CI = [-.37, .15], were significant. Thus, no mediation effect emerged, see Figure 2 (grey).

Discussion

In both samples, almost everyone (98.0% and 99.5% respectively) engaged in some form of social distancing. Notably, degree of isolation as to work-mode impacted the extent to which people experienced their self-related needs as fulfilled: People engaged in work of any form felt better about psychological needs, with those working outside the home experiencing more meaning than those engaged in telework. Interpersonal interactions provided by working remotely or on site apparently satisfy self-related needs, and going out into the world to work

⁴ We also calculated a 2 (gender: male vs. female) $\times$ 2 (country: USA vs. Germany) $\times$ 2 (condition: exclusion vs. inclusion) MANOVA on the four needs. No main or interaction effects with gender emerged, $ps \geq .169$.

appears to add to sense of meaning. Finding Germans feeling better in terms of self-esteem and belonging compared to Americans, while finding Americans reporting higher feelings of control, partially replicates cross-cultural findings (Pfundmair, Aydin, et al., 2015). It suggests that a more individualistic cultural background (US) is associated with being more threatened by exclusion. These findings confirm our overall assumption that different degrees of social distancing affect the self-related needs studied as outcomes of social exclusion manipulations.

Comparisons with data of the same kind from cross-cultural samples in which participants were randomly assigned to an inclusion or exclusion condition, substantiate the notion that social distancing affects well-being similarly as social exclusion manipulations: Need fulfilment during social distancing was lower than under (the expected) condition of inclusion, but slightly higher than under acute conditions of directed exclusion. Also, in these analyses, in line with previous cross-cultural research on exclusion (Pfundmair, et al. 2015; Uskul & Over, 2017), Germans appeared less impacted by both distancing and exclusion than Americans in self-esteem and belonging. Interestingly, Germans experienced higher control than Americans in the pre-COVID-19 exclusion condition, but lower control under COVID-19 distancing. Whereas our country-level predictions for cultural differences were confirmed, we did not find these reflected in self-construal.

As predicted there was a gender difference specific to the prolonged mandated social distancing: women reported lower need fulfilment while socially distancing. We found this outcome to be mediated by need to belong: Women indicated higher need to belong than men and this was associated with lower need fulfilment. Importantly however, while we found women to also indicate higher need to belong in the pre-COVID-19 samples in both countries, need to belong did not mediate between gender and need fulfillment: High need to belong was

not associated with less fulfillment of self-related needs in the pre-COVID-19 sample. In other words, women's greater need to belong did not impact wellbeing when experiencing inclusion or exclusion pre-COVID-19. Finding this relationship uniquely in the COVID-19 sample therefore might indicate that the COVID-19-related exclusion is particularly difficult to cope with for women, since customary fulfilment of belongingness needs is not as available, while role expectations might be hyper-salient. This, however, is only speculation, since we did not examine salience of role expectations here.

Limitations

There are limitations to our research. Even though the both samples are from a university context and in roughly the same time frame in locations that had almost parallelly timed social distancing protocols, we cannot know for certain the extent to which social distancing was perceived as normative in the respective samples, especially in light of the fast-moving public opinion on COVID-19. Also, despite the parallels, there are differences in age distribution and sample size.

While effect sizes are relatively large comparing inclusionary status and country, they are comparatively smaller for the gender differences. It is likely that family situation plays a role in how gender role expectations affect people's experience of social distancing. Future studies would benefit from looking into specific aspects of living with family (e.g. presence of children, living with a male partner, etc.) as well as into the salience of role expectations.

General discussion

At the time of writing, in November 2020, it looks as though social distancing as a way to contain COVID-19 will stay with us for a while. Here we examined this new normative behavior from the lens of social exclusion. Even though it does not convey the same informational value

about the self as directed ostracism does, COVID-19 related social distancing was – like ostracism studied with experimental manipulations – experienced as a threat to self-related needs.

Finding this impact of mandated exclusion, converges with previous research that substantiates the notion of an evolved ostracism detection system (Spoor & Williams, 2007) employed to ensure the vital need for inclusion is not threatened in the long run. The over-detection bias of instances of social exclusion impacts well-being in the form of thwarted self-needs as an initial response to the situation. However, as theorized in Williams' (2009) temporal need-threat model, this distress can be alleviated by subsequent reflection on context and meaning of the exclusion (e.g. Wesselmann, et al., 2013) and differs dependent on cultural context (Uskul & Over, 2017). This emphasizes the importance of context variables and how they inform appraisals of the exclusion associated with social distancing. Here, we found work context, culture, and gender modulating the impact of social distancing on self-related needs. Even though the current circumstances are unique and it is difficult to predict for how long social distancing as a public health measure will be in place, isolating oneself from desired contact with others, to avoid negative consequences, is always part of people's socio-behavioral repertoire and warrants better understanding in the context of social exclusion research.

References

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497-529. <https://doi.org/10.1037/0033-2909.117.3.497>

- Baumeister, R. F., & Sommer, K. L. (1997). What do men want? Gender differences and two spheres of belongingness: Comment on Cross and Madson (1997). *Psychological Bulletin*, 122(1), 38–44. <https://doi.org/10.1037/0033-2909.122.1.38>
- Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The Lancet*. [https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8)
- CDC. (2020, July 29). *Coronavirus Disease 2019 (COVID-19) – Prevention & Treatment*. Centers for Disease Control and Prevention. <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html>
- Chung & van der Lippe, 2018 Chung, H., & Van der Lippe, T. (2018). Flexible working, work–life balance, and gender equality: Introduction. *Social Indicators Research*, 1-17. <https://doi.org/10.1007/s11205-018-2025-x>
- 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
- Gabriel, S., & Gardner, W. L. (1999). Are there "his" and "hers" types of interdependence? The implications of gender differences in collective versus relational interdependence for affect, behavior, and cognition. *Journal of Personality and Social Psychology*, 77(3), 642–655. <https://doi.org/10.1037/0022-3514.77.3.642>
- Gaskell, A. (2020). Breaking Down The Gender Divide To Survive Working From Home. *Forbes*. Apr 1, 2020. Retrieved from: <https://www.forbes.com/sites/adigaskell/2020/04/01/breaking-down-the-gender-divide-to-survive-working-from-home/#57d2ca1b20cf>

- Gonsalkorale, K., & Williams, K. D. (2007). The KKK won't let me play: Ostracism even by a despised outgroup hurts. *European Journal of Social Psychology*, 37(6), 1176-1186. <https://doi.org/10.1002/ejsp.392>
- Graupmann, V. (2018). Show me what threatens you, and I can tell who you are: Perception of threat and the self. *Self and Identity*, 17(4), 407-417. <https://doi.org/10.1080/15298868.2017.1412346>
- Hayes, A. F. (2013). *Introduction to mediation: A regression-based approach*. Guilford Press.
- Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: Software of the mind (3rd ed.)*. McGraw-Hill.
- Jamieson, J. P., Harkins, S. G., & Williams, K. D. (2010). Need threat can motivate performance after ostracism. *Personality and Social Psychology Bulletin*, 36(5), 690-702. DOI: 10.1177/0146167209358882
- Kerr, N. L., & Levine, J. M. (2008). The detection of social exclusion: Evolution and beyond. *Group Dynamics: Theory, Research, and Practice*, 12, 39–52. <https://doi.org/10.1037/1089-2699.12.1.39>
- Leary, M. R., Kelly, K. M., Cottrell, C. A., & Schreindorfer, L. S. (2013). Construct validity of the need to belong scale: Mapping the nomological network. *Journal of Personality Assessment*, 95, 610-624. <https://doi.org/10.1080/00223891.2013.819511>
- Pfundmair, M., & Wetherell, G. (2019). Ostracism drives group moralization and extreme group behavior. *The Journal of Social Psychology*, 159(5), 518-530. <https://doi.org/10.1080/00224545.2018.1512947>

- Pfundmair, M., Aydin, N., Du, H., Yeung, S., Frey, D., & Graupmann, V. (2015). Exclude me if you can: Cultural effects on the outcomes of social exclusion. *Journal of Cross-Cultural Psychology*, 46(4), 579-596. <https://doi.org/10.1177/0022022115571203>
- Pfundmair, M., Graupmann, V., Frey, D., & Aydin, N. (2015). The different behavioral intentions of collectivists and individualists in response to social exclusion. *Personality and Social Psychology Bulletin*, 41(3), 363-378. <https://doi.org/10.1177/0146167214566186>
- Sacchi, S., Brambilla, M., & Graupmann, V. (2019). Basking in detected vice: Outgroup immorality enhances self-view. *Group Processes & Intergroup Relations*, <https://doi.org/10.1177/1368430219895320>
- Sher, L. (2020). COVID-19, anxiety, sleep disturbances and suicide. *Sleep Medicine*. doi: 10.1016/j.sleep.2020.04.019
- Spoor, J. R., & Williams, K. D. 2007. The evolution of an ostracism detection system. In J. P. Forgas, M. Haselton, & W. von Hippel (Eds.), *The evolution of the social mind: Evolutionary psychology and social cognition*: 279- 292. New York: Psychology Press
- Uskul, A. K., & Over, H. (2017). Culture, social interdependence, and ostracism. *Current Directions in Psychological Science*, 26(4), 371-376. <https://doi.org/10.1177/0963721417699300>
- Wesselmann, E. D., Cardoso, F. D., Slater, S., & Williams, K. D. (2012). To be looked at as though air: Civil attention matters. *Psychological Science*, 23(2), 166-168. <https://doi.org/10.1177/0956797611427921>

- Wesselmann, E. D., Ren, D., Swim, E., & Williams, K. D. (2013). Rumination hinders recovery from ostracism. *International Journal of Developmental Science*, 7(1), 33-39.
DOI: 10.3233/DEV-1312115
- Williams, K. D. (2007). Ostracism: The kiss of social death. *Social and Personality Psychology Compass*, 1(1), 236-247. <https://doi.org/10.1111/j.1751-9004.2007.00004.x>
- Williams, K. D. (2009). Ostracism: A temporal need-threat model. *Advances in Experimental Social Psychology*, 41, 275-314. [https://doi.org/10.1016/S0065-2601\(08\)00406-1](https://doi.org/10.1016/S0065-2601(08)00406-1)
- Williams, K. D., Cheung, C. K., & Choi, W. (2000). Cyberostracism: effects of being ignored over the Internet. *Journal of Personality and Social Psychology*, 79(5), 748-762. doi: 10.1037//0022-3514.79.5.748
- Wirth, J. H., Sacco, D. F., Hugenberg, K., & Williams, K. D. (2010). Eye gaze as relational evaluation: Averted eye gaze leads to feelings of ostracism and relational devaluation. *Personality and Social Psychology Bulletin*, 36(7), 869-882. doi: 10.1177/0146167210370032
- Yoo, B., Donthu, N., & Lenartowicz, T. (2011). Measuring Hofstede's five dimensions of cultural values at the individual level: Development and validation of CVSCALE. *Journal of international consumer marketing*, 23(3-4), 193-210.
- Zadro, L., Williams, K. D., & Richardson, R. (2004). How low can you go? Ostracism by a computer is sufficient to lower self-reported levels of belonging, control, self-esteem, and meaningful existence. *Journal of Experimental Social Psychology*, 40(4), 560-567. <https://doi.org/10.1016/j.jesp.2003.11.006>