RESEARCH ARTICLE

Group-specific contact and sense of connectedness during the COVID-19 pandemic and its associations with psychological well-being, perceived stress, and work-life balance

Helen Landmann [ID] | Anette Rohmann [ID]

Department of Psychology, FernUniversität in Hagen, Community Psychology, Hagen, Germany

Correspondence
Helen Landmann, Department of Psychology, FernUniversität in Hagen, Community Psychology, 58084 Hagen, Germany.
Email: helen.landmann@fernuni-hagen.de

Abstract

Theories of social cure, sense of community, and social identity suggest that feelings of connectedness affect how we have coped with the COVID-19 pandemic. Although people can feel connected to a variety of different groups, such as their family, friends, co-workers, neighbours, nation, or all humanity, previous research has focused on connectedness to only a subset of these groups. To examine the relative importance of connectedness to and contact with specific groups for well-being, stress, and work-life balance during the pandemic, we conducted a longitudinal experience sampling study ($N = 578$) during the first 8 weeks of the Spring 2020 COVID-19 lockdown in Germany. Feeling connected to family members most strongly predicted psychological well-being (positively) and perceived stress (negatively) during the lockdown, followed by a sense of connectedness with friends and neighbours. Sense of connectedness to other groups did not predict well-being, stress, or work-life balance when controlling for the respective other groups. Hence, it not only matters whether or not a person feels connected to a group but also to which specific group he or she feels connected.

1 | SENSE OF CONNECTEDNESS DURING THE COVID-19 CONTACT RESTRICTIONS

Feeling connected to others is a central human need that enhances well-being and reduces stress – an effect known as social cure (Haslam, Jetten, Cruwys, Dingle, & Haslam, 2018). Face-to-face encounters are the typical means by which individuals form such a sense of connectedness with others. However, such face-to-face contact was abruptly restricted in response to the spread of COVID-19: Governments across the world implemented measures to reduce contacts among their residents (e.g., schools were closed, travel bans were implemented, group gatherings were prohibited). Scholars have discussed the potentially detrimental effects of these contact restrictions for individuals' well-being and the potential positive effects of feeling connected to others on coping with the crisis (Jetten, Reicher, Haslam, & Cruwys, 2020). To date, it is not sufficiently clear to what extent mediated contact can compensate for reduced face-to-face contact of this scope, how individuals' sense of connectedness develops when face-to-face contact is restricted, and whether which group one feels connected to matters for the positive effects on coping with crises. The current research addresses these questions in a longitudinal experience sampling study by investigating contact with and feelings of connectedness to different groups during the first weeks of contact restrictions in Germany and its associations with well-being, stress, and work-life balance.

1.1 | Sense of connectedness

People can feel connected to different groups, such as their circle of friends, family members, co-workers, neighbours, people living in their country, and people around the world. Different concepts have been developed to capture these experiences of connectedness. One such concept is *social identity*. According to social identity theory, part of an individual's self-concept is linked to group membership (Tajfel, Turner, Austin, & Worchel, 1979). Individuals can identify with different groups, including their family, friends, co-workers, neighbours, nation or all humanity (Lickel et al., 2000). Identification with a group encompasses perceiving oneself as similar to other group members (individual self-stereotyping), perceiving group members as similar to each other (in-group homogeneity), feeling bonds with the group (solidarity), experiencing group membership as pleasant (satisfaction), and experiencing group membership as an important part of one's own identity (centrality) (Leach et al., 2008).

Another concept capturing feelings of connectedness is *sense of community*, which is the feeling of belonging to a group of people who matter to one another and share a common fate (McMillan & Chavis, 1986). Sense of community originally focused on cohesiveness within neighbourhoods, but has since been transferred to other contexts, including an organizational sense of community (Hughey, Speer, & Peterson, 1999) and sense of global community (Hackett, Omoto, & Matthews, 2015). Sense of community encompasses feelings of belonging to the group (membership), a sense of making a difference to the group (influence), the expectation that one's personal needs will be met by the group's resources (reinforcement), and the belief that members have a shared history and a shared future (shared emotional connection) (Peterson, Speer, & Hughey, 2006).

Feelings of connectedness represent the point of overlap between social identity and sense of community. These feelings of connectedness are reflected in the solidarity and satisfaction subdimensions of social identity as well as the membership and emotional connection subdimensions of sense of community. The other subdimensions refer to cognitive representations of the self and the group (i.e., self-stereotyping, homogeneity, and centrality) or

efficacy beliefs (i.e., influence and reinforcement). In the present research, we use the term 'sense of connectedness' in order to clarify that we focus on the overlapping aspects of social identity and sense of community.

1.2 | Sense of connectedness and contact

Contact in the form of social interaction is regarded as essential for developing a sense of community (McMillan & Chavis, 1986). In line with this, providing space that facilitates face-to-face contact among community members increases their sense of community (e.g., Semenza, March, & Bontempo, 2007). This effect is not restricted to face-to-face contact: People can feel connected to virtual groups such as Facebook groups (Reich, 2010) and online fan clubs (Obst, Zinkiewicz, & Smith, 2002) as well. However, face-to-face interactions seem to affect sense of community more than virtual interactions: It takes longer to develop trust in computer-mediated teams compared to face-to-face teams (Wilson, Straus, & McEvily, 2006), and blended learning courses that combine online and offline teaching lead to a stronger sense of community among students compared to courses that are exclusively held online (Rovai & Jordan, 2004).

The relevance of face-to-face and mediated contact for the sense of connectedness during the COVID-19 pandemic is not sufficiently clear. During the first wave of the COVID-19 pandemic in Spring 2020, schools and kindergartens were closed, citizens were asked to work from home, public life was severely restricted, and travel bans were introduced in many countries around the world. These measures abruptly restricted face-to-face contact among individuals. For the first time, humanity experienced contact restrictions with a global scope and an unpredictable duration. Thus, it was difficult to predict the psychological reactions to these restrictions. On the one hand, it is possible that sense of connectedness is highly contingent on face-to-face contact and thus declines to the extent that face-to-face interaction is restricted. On the other hand, humans shared a common fate in terms of the threat posed by the virus and the measures to combat it, and mediated contact may have compensated for reduced face-to-face contact. Thus, the first aim of the present research was to explore the course of and associations between face-to-face contact, mediated contact, and sense of connectedness during contact restrictions.

1.3 | Sense of connectedness and coping with crises

Sense of connectedness is a central human need that enhances well-being (Haslam et al., 2018). In addition, people who feel connected to others may feel more supported by others and hence experience less stress in the face of the threats associated with the pandemic, such as the threat of infection and the threat of unemployment (Jetten et al., 2020). Stress due to increased worries or demands as well as reduced work-life balance are predictors of reduced well-being in general (Fliege et al., 2005; Syrek, Bauer-Emmel, Antoni, & Klusemann, 2011). During the COVID-19 contact restrictions, these factors may have been particularly relevant as individuals may have experienced worries due to the pandemic and impaired work-life balance due to limited childcare. In support of this claim, feeling connected to one's neighbours during the COVID-19 lockdown in New Zealand was positively associated with psychological well-being (Sibley et al., 2020), perceived support from family members was positively associated with mental health during the COVID-19 contact restrictions in China (Li & Xu, 2020), and perceived social support from family members and friends was associated with reduced stress during the pandemic in Turkey (Özer, Özkan, Budak, & Özmen, 2021).

However, these studies are based on cross-sectional data. Hence, it is not clear whether the associations between connectedness and well-being/stress resulted from individual differences that already existed before the pandemic or from changes in sense of connectedness and well-being during the contact restrictions. Therefore, the second aim of the present research was to address this question by disentangling within- and between-person variance in sense of connectedness and indicators of well-being and stress by means of a longitudinal experience sampling study.

1.4 | Group-specific effects of contact and sense of connectedness

These associations between contact, sense of connectedness, and coping with the pandemic may depend on the group one has contact with or feels connected to. To date, we know little about whether connections to different types of groups have a differential impact on well-being and stress in general and on coping with the COVID-19 pandemic in particular. Theoretical frameworks differentiate groups according to their closeness or their instrumental value for the individual. According to the model of socio-ecological systems (Bronfenbrenner, 1977, 2005), every person is embedded in various environmental layers (e.g., family, friends, neighbours, co-workers) that differ in their psychological closeness, norms about social interactions, and their functions for the individual. In line with this, Lickel et al. (2000) differentiate groups according to their instrumental value – namely, intimacy groups (e.g., family, friends), task groups (e.g., work groups, sports teams, musical groups), social categories (e.g., nationality, ethnicity, gender), and loose associations (e.g., neighbours). Contact restrictions such as those adopted during the COVID-19 pandemic may differentially impact relationships and feelings of connectedness to members of different groups. For instance, the functions of task groups may be more easily met through mediated contact than the functions of intimacy groups.

Furthermore, changes in feelings of connectedness to close groups (family or friends) may be more relevant for well-being than changes in feelings of connectedness to less close groups (co-workers and neighbours). To date, the relevance of connectedness for well-being has mostly been studied with respect to one group only in research conducted both before the pandemic (e.g., Davidson & Cotter, 1991; Sani, Herrera, Boroch, & Gulyas, 2012) and during the pandemic (Li & Xu, 2020; Sibley et al., 2020). Only a few studies investigate a sense of connectedness to multiple groups. For instance, a study investigating sense of connectedness to family members, the local community, and one group of choice revealed that feeling connected to multiple groups positively predicted healthy behaviour of Scottish community members (Sani, Madhok, Norbury, Dugard, & Wakefield, 2015), suggesting that connectedness to each group matters. Similarly, connectedness to family, school, and neighbourhood each mattered for adolescents' well-being and educational outcomes in the US (Witherspoon, Schotland, Way, & Hughes, 2009). However, a study with majority and minority members in the US revealed that the association between majority members' feelings of connectedness to all humanity and well-being diminished when controlling for connectedness to family members and the local community (Hodges & Gore, 2019) and can thus be attributed to general feelings of connectedness. This illustrates the importance of considering connectedness to multiple groups.

Based on the existing literature, it is impossible to tell whether face-to-face contact and mediated contact are equally important for feeling connected to different groups and whether associations between sense of connectedness and well-being are caused by general feelings of connectedness or by feeling connected to a specific group. Thus, the third aim of the present research was to investigate whether the associations between contact, sense of connectedness, and coping with the pandemic depend on the type of group under consideration.

2 | THE PRESENT RESEARCH

The present research set out to address these questions with a longitudinal experience sampling study investigating contact and sense of connectedness to a variety of different groups (i.e., family, friends, co-workers, neighbours, nation, humanity) and its associations with well-being, stress, and work-life balance during the first eight weeks of the Spring 2020 COVID-19 contact restrictions in Germany (March 16–May 10, 2020). Over the course of the study, the government gradually implemented a number of measures to combat the spread of the virus. Shortly before the study started – on March 11 - the World Health Organization (WHO) declared COVID-19 a pandemic. During the first week of the study, schools and kindergartens were shuttered, and most did not open again until after the end of the study. Residents were asked to stay home and work from home if possible and to avoid contact with individuals from other households. From the sixth week on, the stay-at-home order was liberalized; concurrently, a mask mandate was introduced in shops and on public transport. From the first until the sixth week, public life was severely

restricted (e.g., only takeaway orders from restaurants, closure of bars, clubs, and numerous shops). Border controls and travel bans lasted from the second until the eighth week.

We aimed to investigate how contact during the lockdown was associated with sense of connectedness. We expected that both face-to-face as well as mediated contact would be positively associated with a sense of connectedness. We explored whether these associations depend on the type of contact (face-to-face vs. mediated) and the type of group (family, friends, co-workers, neighbours, nation, humanity).

Furthermore, we investigated the relevance of sense of connectedness for psychological well-being, perceived stress, and perceived work-life balance. We expected that feeling connected to others would be positively associated with well-being and work-life balance and negatively associated with stress. We explored whether these associations can be attributed to variance within individuals over time and/or variance between individuals, as well as whether associations between group-specific sense of connectedness and coping with the pandemic persist when controlling for the respective other groups.

3 | METHOD

3.1 | Participants

A total of 578 members of the community in Germany signed up for the study, 98 of whom dropped out during the four waves of the experience sampling study, which corresponds to an attrition rate of 5.7% from one wave to the next. The remaining 480 participants (369 women, 103 men, 8 non-binary) who participated in all four waves of the study were between 18 and 72 years of age ($M_{age} = 34.6$, $SD_{age} = 10.6$). The vast majority (93.1%) were students at the FernUniversität in Hagen, which is a distance learning university with a diverse student body with regard to age, family, and employment status as well as place of residence within Germany (Stürmer et al., 2018). Most participants were full-time employees (28.3%), part-time employees (31.7%), or freelancers (10.4%). Most participants lived with at least one other person (76.3%), 122 participants (25.4%) were parents, and 64 participants (13.3%) indicated that they were at high-risk of becoming severely ill if infected with COVID-19.

3.2 | Procedure

Participants were recruited via the university's virtual laboratory and participated in the online experience sampling study in exchange for course credit. In addition, we raffled off 10 book vouchers of 25 Euros each. Participants took part in four experience sampling waves with time lags of one week each. In the first wave, participants responded to a baseline questionnaire and the first weekly questionnaire. In the second and third waves, participants responded to the weekly questionnaire only. In the fourth wave, participants responded to the weekly questionnaire and a final questionnaire. Participants started the study during the first five weeks of the Spring 2020 lockdown in Germany. The experience sampling study was completed within the first eight weeks of the lockdown (March 16–May 10, 2020).

3.3 | Instruments

An overview of all measures is provided in Figure S1 and results regarding different types of loneliness (emotional, social, physical) covered by the study are already published (Landmann & Rohmann, 2021). Participants responded to the contact and well-being scales in the weekly questionnaires and to the connectedness scales in the baseline and final questionnaires. Anonymized data and syntaxes are stored in an OSF project (https://osf.io/tn9p3).

Sense of connectedness was assessed with an extended and adapted version of the Identification with All Humanity Scale (IWAH; McFarland, Webb, & Brown, 2012; German translation by Reese, Proch, & Finn, 2015). The original scale consists of nine items capturing feelings of connectedness to three groups (i.e., community, nation, all humanity). To further differentiate 'community', we asked participants to indicate their connectedness to friends, family, co-workers, and neighbours separately instead of their connectedness to the community in general. We excluded one of the original items because it explicitly uses the term 'family' (i.e., *Sometimes people think of those who are not a part of their immediate family as 'family'. To what degree do you think of the following groups of people as 'family'?*). The final set of items (8 items for each group) are reported in the Supplemental Material. Participants rated to what extent they agreed with the items on scales ranging from 1 (*not at all*) to 7 (*completely*). Confirmatory factor analyses revealed that a 6-factor solution with one factor for each group explains the variance in the connectedness statements better than a 1-factor or 3-factor solution (see Table S1). Reliability coefficients were calculated for each wave. Feeling connected to friends (α between .83 and .86), family members (α between .88 and .90), co-workers (α between .91 and .92), neighbours (α between .89 and .90), people living in Germany (α between .86 and .87), and all humanity (α between .88 and .88) formed reliable scales. For each group, mean ratings were computed, with higher values indicating higher levels of connectedness.

Face-to-face and mediated contact were assessed for different communities with one item each following the procedure proposed by Landmann, Rohmann, Gaschler, Weissinger, and Mazziotta (2021). Participants indicated how many hours per day they have been spending in face-to-face contact (i.e., *talking face-to-face*) and mediated contact (i.e., *talking on the phone or via video chat*) with each of the following groups: Family members, friends, co-workers, neighbours, and others. Participants could select integer numbers of hours between *0 hours* and *10 or more hours*. In the baseline questionnaire, participants responded to this question with regard to a typical day before the pandemic. In the weekly questionnaires, participants responded to this question with regard to the last week.

Psychological well-being was assessed with the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS; 14 items; Tennant et al., 2007; German translation by Lang & Bachinger, 2017). The items cover aspects of positive affect (e.g., *I've been feeling relaxed*), positive functioning (e.g., *I've been dealing with problems well*) and satisfying relationships (e.g., *I've been feeling loved*), which create a reliable well-being scale (α between .92 and .95 for the individual waves). Participants rated to what extent they agreed with the items with regard to the previous week on scales ranging from 1 (*not at all*) to 7 (*completely*). We computed the scale mean, with higher values indicating higher levels of psychological well-being.

Perceived stress was assessed with the German version of the Perceived Stress Questionnaire (PSQ-20; 20 items; Fliege et al., 2005; Levenstein et al., 1993). The items cover worries (e.g., *I am afraid for the future*), tension (e.g., *I feel tense*), lack of joy (e.g., *I feel light-hearted*; reverse coded), and demands (e.g., *I have too many things to do*), which create a reliable stress scale (α between .93 and .95 for the individual waves). Participants rated to what extent they agreed with each item with regard to the previous week on scales ranging from 1 (*not at all*) to 7 (*completely*). We computed the scale mean, with higher values indicating higher levels of stress.

Work-life balance was assessed with the Trier Work-Life Balance Scale (TKS-WLB; 5 items; e.g., *I am satisfied with my balance between work and private life*; Syrek et al., 2011; α between .90 and .92 for the individual waves). Participants were informed that the questions referred to their job as well as their university studies. Participants rated to what extent they agreed with each item with regard to the previous week on scales ranging from 1 (*not at all*) to 7 (*completely*). We computed the scale mean, with higher values indicating higher levels of work-life balance.

4 | RESULTS

4.1 | Changes over time in contact and connectedness

To investigate changes in contact frequency and sense of connectedness over time, we computed means and 95% confidence intervals for each week of the experience sampling study. As participants started the study in different weeks, it was possible to look at the development of the variables over the eight weeks during which the study was

conducted. Results are shown in Figure 1 and Table S3, together with frequencies of face-to-face and mediated contact for the time before the pandemic (i.e., baseline). Mean levels of psychological well-being, perceived stress, and work-life balance did not change significantly over the eight weeks of the experience sampling study. However, average levels of contact and sense of connectedness did change during the study period.

Face-to-face contact. Changes in contact over time differed significantly depending on the group and the type of contact. Face-to-face contact with friends, co-workers, and other persons decreased significantly in the first week of the lockdown compared to the baseline level. However, while face-to-face contact with friends continuously increased from the second week on, returning to the baseline level in Week 7, face-to-face contact with co-workers and other persons remained low throughout the study period. This indicates that participants immediately used the liberalization of contact restrictions - which were gradually reduced in Germany from Week 6 on - to see their friends, while face-to-face contact with co-workers and other people was not impacted by this policy change. By
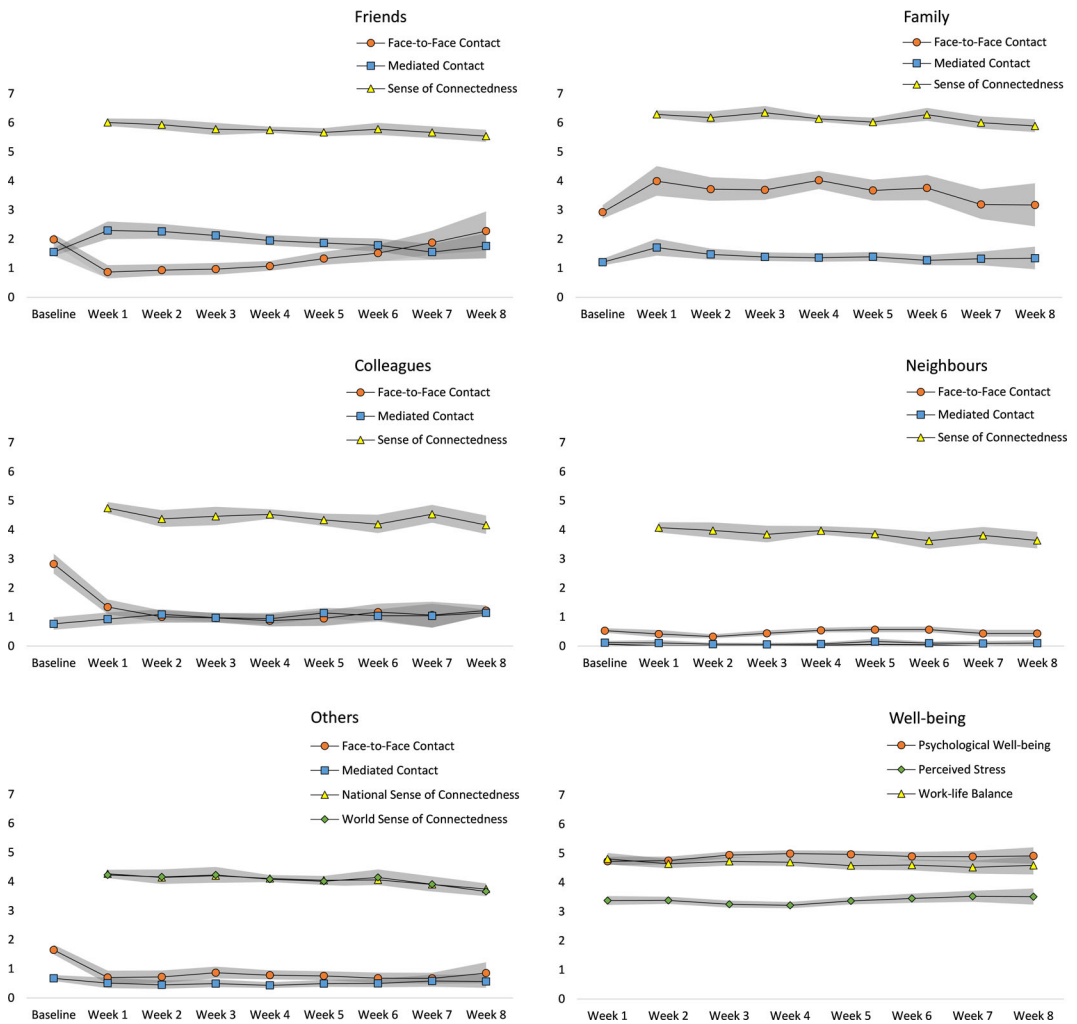
FIGURE 1 Contact and sense of connectedness to different groups during the COVID-19 lockdown. Means for Weeks 1–8 are shown. The baseline indicates contact frequencies prior to the lockdown. Contact was rated in hours per day, sense of connectedness was rated on a scale between 1 and 7, with higher values indicating higher levels of connectedness

contrast, face-to-face contact with family members significantly increased during the first week of the lockdown compared to the baseline level, remained high until Week 6, and then fell in Week 7 back to a normal level. This is in line with the fact that many persons worked from home during the lockdown and thus spent more time with their families. Face-to-face contact with neighbours remained low throughout the study.

Mediated contact. Changes in mediated contact depended on the group as well. Mediated contact with friends significantly increased in the first week of the lockdown and then continuously decreased, returning to the baseline level in Week 5. Mediated contact with family members significantly increased in Week 1 as well, but decreased to the baseline level in Week 2 and remained at that level during the following weeks. Mediated contact with co-workers increased continuously and was significantly more frequent in Week 8 compared to the baseline. Mediated contact with neighbours and other persons remained at a low level throughout the study. This pattern shows that mediated contact with most groups temporarily increased, but the extent and duration of the increased mediated contact differed between groups.

Sense of connectedness. Compared to these large changes in face-to-face and mediated contact, only small changes in sense of connectedness emerged. Sense of connectedness to all groups – except for neighbours – steadily decreased over time, such that participants felt significantly less connected to each respective group in Week 8 compared to Week 1. By contrast, sense of connectedness to neighbours did not significantly change over time. Furthermore, the level of connectedness differed by group: Sense of connectedness to family and friends was strongest throughout the study, followed by co-workers, and lowest for neighbours, people in Germany, and all humanity.

4.2 | Predictors of sense of connectedness to different groups

To investigate how individual differences and contact frequency predicted sense of connectedness, we conducted a multilevel regression analyses in *Mplus* with robust maximum likelihood estimation (MLR), which is a valuable tool for disentangling whether an association is based on the variance between individuals or within individuals over time (Hamaker, 2012). As sense of connectedness was assessed in the first and final waves of the study, the regression analysis covered two waves of the experience sampling study. We specified a model with demographics (i.e., age, gender, living alone, having minor children in the home) as predictors varying between subjects and face-to-face and mediated contact as predictors varying within and between subjects. Sense of connectedness to different groups (i.e., friends, family, co-workers, neighbours, nation, humanity) were specified as correlating dependent variables varying within and between subjects. The results of the multilevel regression analyses are shown in Table 1.

Demographics. Male gender was associated with a lower sense of connectedness to most groups, indicating that women are more prone to feeling connected to others in general. All other demographics differentially predicted sense of connectedness to specific groups. For instance, when controlling for the respective other predictors in the regression, having minor children in the home was positively associated with feeling connected to family members, indicating that caring for children is particularly associated with increased family ties. Furthermore, age was positively associated with feeling connected to neighbours, but negatively associated with feeling connected to all humanity, indicating that closeness to specific groups changes over the lifespan or differs between age cohorts.

Face-to-face and mediated contact also differentially predicted connectedness to specific groups. Changes in face-to-face contact frequency with co-workers and neighbours over time (within-person variance) were positively associated with changes in sense of connectedness to these groups. By contrast, changes in contact frequency with friends and family members were not significantly associated with feelings of connectedness to these groups. This shows that feeling connected to more distant groups (i.e., co-workers or neighbours) was more contingent on short-term changes in contact than feeling connected to close groups (i.e., family or friends). Furthermore, individual differences in sense of connectedness to family members and neighbours (between-person variance) were more strongly associated with face-to-face contact compared to mediated contact. By contrast, individual differences in feeling

TABLE 1 Multilevel regression of sense of connectedness (SoCon) with different groups on demographics and contact

Regression	SoCon friends		SoCon family		SoCon co-workers		SoCon neighbours		SoCon nation		SoCon humanity	
	Within	Between	Within	Between	Within	Between	Within	Between	Within	Between	Within	Between
Age		.06		.06		.10		.14**		−.01		−.10
Gender		−.15**		−.09		−.07		−.19***		−.17**		−.18***
Living alone		−.07		−.10		.04		−.15**		−.10		−.09
Having children		−.03		.10**		−.04		.06		.03		.00
Face-to-face contact	.02	.17*	.02	.38***	.13**	.38***	.07*	.32***	−.01	.08	−.01	.13
Mediated contact	.05	.22**	.01	.11	.03	.34***	.01	.03	.02	.17**	.06	.07
R²	.00	.12*	.00	.21***	.02	.32***	.01	.21***	.00	.08*	.00	.08*
Correlations	Within	Between	Within	Between	Within	Between	Within	Between	Within	Between	Within	Between
Age		−.02		.11*		.12*		.17**		.01		−.11*
Gender		−.12*		−.13*		−.07		−.19***		−.18**		−.18***
Living alone		−.02		−.26***		.11*		−.18***		−.10		−.09
Having children		−.06		.28***		−.07		.18***		.06		.03
Face-to-face contact	.04	.16*	.00	.49***	.15**	.43***	.09*	.39***	−.03	.08	−.02	.12
Mediated contact	.05	.20**	.01	.14*	.08*	.34***	.03	.21**	−.01	.12	.05	.03
Variance	0.25	0.64	0.20	0.77	0.64	1.35	0.51	1.13	0.47	0.84	0.53	0.93
Mean	5.79		6.15		4.48		3.90		4.09		4.08	

Note: Standardized regression coefficients are shown; gender was coded with 1 (male) and 0 (female); living alone and having children were coded with 1 (yes) and 0 (no); * $p < .05$; ** $p < .01$; *** $p < .001$; N = 480.

connected to co-workers and friends were similarly associated with face-to-face and mediated contact. Hence, the relevance of mediated contact for sense of connectedness depended on the group.

4.3 | Sense of connectedness and coping with the pandemic

To investigate how sense of connectedness was associated with coping during the lockdown, a multilevel regression analysis was specified with the connectedness scales (i.e., friends, family, co-workers, neighbours, nation, humanity) as predictors and with psychological well-being, perceived stress, and work-life balance as correlating dependent variables. All variables varied within and between subjects. As sense of connectedness was assessed in the first and the last waves of the study only, the regression analysis covered two waves of the experience sampling study. The results of the multilevel regression analyses are shown in Table 2. Correlations between the connectedness scales are reported in Table S2.

The relevance of connectedness for well-being and stress differed depending on group: Changes in feeling connected to family members (within-person variance) predicted changes in perceived stress. Short-term changes in the other connectedness scales did not predict short-term changes in the dependent variables. Feeling connected to the people with whom participants continued to have face-to-face contact seemed to have been particularly important for their perceived stress state. Furthermore, individual differences in feeling connected to family members and friends positively predicted psychological well-being and negatively predicted perceived stress. Feeling connected to neighbours additionally predicted psychological well-being. Sense of connectedness to co-workers, with people living in the same country and with all humanity did not significantly predict the dependent variables when controlling for feelings of connectedness to the other groups. Hence, the associations between national as well as global connectedness and well-being as well as the associations between the connectedness scales and work-life balance can be attributed to general feelings of connectedness – not feeling connected to certain groups in particular.

TABLE 2 Multilevel regression of well-being, perceived stress, and work-life balance on sense of connectedness (SoCon) with different groups

	Psychological well-being		Perceived stress		Work-life balance	
Regression	Within	Between	Within	Between	Within	Between
SoCon friends	.01	.15*	−.02	−.14*	−.05	.12
SoCon family	.09	.28***	−.12*	−.15*	.04	.11
SoCon co-workers	.04	−.04	.02	.06	−.01	.07
SoCon neighbours	−.06	.16*	.09	−.09	−.05	−.09
SoCon nation	.10	−.03	−.13	−.05	.10	.16
SoCon humanity	−.08	.07	.09	.10	−.04	−.10
R^2	.03	.14**	.05	.07	.02	.07
Correlations	Within	Between	Within	Between	Within	Between
SoCon friends	.06	.24**	−.07	−.17**	−.02	.16**
SoCon family	.10	.35***	−.12*	−.19**	.02	.15**
SoCon co-workers	.05	.10	.01	−.03	−.02	.12*
SoCon neighbours	.00	.27***	.04	−.15*	−.02	.07
SoCon nation	.04	.20**	−.03	−.10	.02	.13*
SoCon humanity	−.01	.14*	.03	−.05	.00	.08
Variance (within/between)	0.62	0.74	0.44	0.91	0.68	1.41
Mean		4.90		3.34		4.66

Note: Standardized regression coefficients are shown; *p < .05; **p < .01; ***p < .001; N = 480.

5 | DISCUSSION

The present research investigated sense of connectedness to different groups during the Spring 2020 COVID-19 contact restrictions in Germany with a longitudinal experience sampling study. The results revealed important insights into the stability of sense of connectedness. Despite the large changes in face-to-face and mediated contact, sense of connectedness decreased only slightly. Furthermore, changes in contact during the study period did not predict changes in sense of connectedness with close groups (family and friends). These findings are consistent with previous research suggesting that sense of community is highly stable over time (Prati & Cicognani, 2018). However, the small decreases in sense of connectedness over time also indicate limits of this stability. Furthermore, changes in face-to-face contact with distant groups (co-workers and neighbours) were associated with changes in sense of connectedness with these groups. Hence, the stability of sense of connectedness seems to depend on the type of group in question. Feeling connected to close groups seems to be more resilient to short-term changes in contact frequency than feeling connected to more distant groups.

The results also contribute to knowledge about the association between sense of connectedness and well-being. Sense of connectedness established before the lockdown predicted participants' well-being during the pandemic. As expected, sense of connectedness was associated with increased psychological well-being, increased work-life balance, and reduced stress. However, the relevance of these feelings of connectedness for well-being depended on the group people felt connected to. Specifically, feeling connected to family members was most important for participants' well-being during the lockdown, followed by sense of connectedness to friends and neighbours. Potentially, sense of connectedness to close groups encompasses aspects that are more important with respect to the pandemic's implications for well-being (such as support with the challenges of everyday life) than more distant groups. This finding is compatible with previous research revealing the importance of connectedness to family members (Li & Xu, 2020), friends (Özer et al., 2021), and neighbours (Sibley et al., 2020) for well-being during the COVID-19 contact restrictions. However, it goes beyond these results by demonstrating that feeling connected to these groups predicts well-being even when controlling for connectedness to other groups.

By contrast, sense of connectedness to co-workers, people living in the same nation, and all humanity did not predict psychological well-being, stress or work-life balance when controlling for the respective other groups. This is consistent with the finding that the association between identification with all humanity and well-being diminishes when controlling for community and national identification (Hodges & Gore, 2019). The present results additionally show that the association between national sense of connectedness and well-being also diminishes when controlling for more specific groups such as family and friends. Hence, research examining sense of connectedness in terms of social identity or sense of community with only one group should be interpreted with caution. It is possible that such results can be attributed to a general tendency to feel connected to others, not to feeling connected to a specific group in particular.

Overall, our findings support the claim that feeling connected to others was associated with increased well-being and reduced stress during the pandemic (Jetten et al., 2020), but also reveal the limitations of this claim: As discussed above, the strength of this association depends on the type of group under examination. Furthermore, changes in sense of connectedness to most groups during the study period did not predict changes in well-being. This suggests that although feeling connected is essential for humans, not every change in sense of connectedness immediately affects a person's well-being. Individuals seem to be resilient to short-term changes in feelings of connectedness.

5.1 | Limitations and future research

We identified changes in sense of connectedness during the Spring 2020 COVID-19 contact restrictions in Germany and their associations with contact, psychological well-being, perceived stress, and work-life balance. However, we observed the first 8 weeks of the contract restrictions only and the sample was not representative of the German population. Changes in sense of connectedness during that time were only weakly associated with contact and well-being. Detrimental effects of changes in sense of connectedness may occur with a greater time lag or in more vulnerable groups.

We examined sense of connectedness with a broad variety of groups (i.e., family, friends, co-workers, neighbours, nation, humanity), thus expanding previous research, which had focused on only a subset of these groups. The results suggest that during the COVID-19 contact restrictions, feeling connected to family members was particularly important for one's well-being, followed by connectedness to friends and neighbours. However, it is not clear whether the results generalize to situations without or with different forms of contact restrictions. Future research can address this issue by examining group-specific effects of connectedness in other contexts.

5.2 | Practical implications

Feeling connected to different groups of people differently predicted well-being during the COVID-19 contact restrictions. The finding that sense of connectedness to family members predicted well-being best, followed by friends and neighbours, suggests that in times of crisis, it may be beneficial for well-being to concentrate on relationships with close groups, such as family and friends, and groups one continues to have sporadic face-to-face contact with, such as neighbours. The finding that sense of connectedness to family members was most important for increased well-being and reduced stress further highlights the importance of supporting families during the pandemic. However, the relative stability of psychological well-being, perceived stress, and work-life balance also reveals that many individuals are resilient to short-term contact restrictions.

ORCID
Helen Landmann https://orcid.org/0000-0001-9391-575X
Anette Rohmann https://orcid.org/0000-0003-4757-1460

REFERENCES
Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist*, *32*(7), 513–531. https://doi.org/10.1037/0003-066X.32.7.513
Bronfenbrenner, U. (2005). The developing ecology of human development: Paradigm lost or paradigm regained. In U. Bronfenbrenner (Ed.), *Making human beings human: Bioecological perspectives on human development* (pp. 94–105). Thousand Oaks, CA: Sage.

Davidson, W. B., & Cotter, P. R. (1991). The relationship between sense of community and subjective well-being: A first look. *Journal of Community Psychology*, *19*(3), 246–253. https://doi.org/10.1002/1520-6629(199107)19:3%3C246::AID-JCOP2290190308%3E3.0.CO;2-L

Fliege, H., Rose, M., Arck, P., Walter, O. B., Kocalevent, R. D., Weber, C., & Klapp, B. F. (2005). The Perceived Stress Questionnaire (PSQ) reconsidered: Validation and reference values from different clinical and healthy adult samples. *Psychosomatic Medicine*, *67*(1), 78–88. https://doi.org/10.1097/01.psy.0000151491.80178.78

Hackett, J. D., Omoto, A. M., & Matthews, M. (2015). Human rights: The role of psychological sense of global community. *Peace and Conflict: Journal of Peace Psychology*, *21*(1), 47–67. https://doi.org/10.1037/pac0000086

Hamaker, E. L. (2012). Why researchers should think "within-person": A paradigmatic rationale. In M. R. Mehl & T. S. Conner (Eds.), *Handbook of research methods for studying daily life* (pp. 43–61). New York, NY: The Guilford Press.

Haslam, C., Jetten, J., Cruwys, T., Dingle, G. A., & Haslam, S. A. (2018). *The new psychology of health: Unlocking the social cure*. London, England: Routledge.

Hodges, J. M., & Gore, J. S. (2019). Social connections and well-being: With whom do you identify and why? *Psychological Studies*, *64*(4), 436–446. https://doi.org/10.1007/s12646-019-00506-1

Hughey, J., Speer, P. W., & Peterson, N. A. (1999). Sense of community in community organizations: Structure and evidence of validity. *Journal of Community Psychology*, *27*(1), 97–113. https://doi.org/10.1002/(SICI)1520-6629(199901)27:1<97::AID-JCOP7>3.0.CO;2-K

Jetten, J., Reicher, S. D., Haslam, S. A., & Cruwys, T. (2020). *Together apart: The psychology of Covid-19*. London, England: Sage Publications.

Landmann, H., & Rohmann, A. (2021). When loneliness dimensions drift apart: Emotional, social and physical loneliness during the COVID-19 lockdown and their associations with age, personality, stress, and well-being. *International Journal of Psychology*. https://doi.org/10.1002/ijop.12772

Landmann, H., Rohmann, A., Gaschler, R., Weissinger, S., & Mazziotta, T. (2021). Context matters: Social context moderates the association between indirect intergroup contact and attitudes towards refugees (Manuscript under review).

Lang, G., & Bachinger, A. (2017). Validation of the German Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) in a community-based sample of adults in Austria: A bi-factor modelling approach. *Journal of Public Health*, *25*(2), 135–146. https://doi.org/10.1007/s10389-016-0778-8

Leach, C. W., Van Zomeren, M., Zebel, S., Vliek, M. L., Pennekamp, S. F., Doosje, B., ... Spears, R. (2008). Group-level self-definition and self-investment: A hierarchical (multicomponent) model of in-group identification. *Journal of Personality and Social Psychology*, *95*(1), 144–165. https://doi.org/10.1037/0022-3514.95.1.144

Levenstein, S., Prantera, C., Varvo, V., Scribano, M. L., Berto, E., Luzi, C., & Andreoli, A. (1993). Development of the Perceived Stress Questionnaire: A new tool for psychosomatic research. *Journal of Psychosomatic Research*, *37*(1), 19–32. https://doi.org/10.1016/0022-3999(93)90120-5

Li, S., & Xu, Q. (2020). Family support as a protective factor for attitudes toward social distancing and in preserving positive mental health during the COVID-19 pandemic. *Journal of Health Psychology*. https://doi.org/10.1177/1359105320971697

Lickel, B., Hamilton, D. L., Wieczorkowska, G., Lewis, A., Sherman, S. J., & Uhles, A. N. (2000). Varieties of groups and the perception of group entitativity. *Journal of Personality and Social Psychology*, *78*(2), 223–246. https://doi.org/10.1037/0022-3514.78.2.223

McFarland, S., Webb, M., & Brown, D. (2012). All humanity is my ingroup: A measure and studies of identification with all humanity. *Journal of Personality and Social Psychology*, *103*(5), 830–853. https://doi.org/10.1037/a0028724

McMillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, *14*(1), 6–23. https://doi.org/10.1002/1520-6629(198601)14:1<6::AID-JCOP2290140103>3.0.CO;2-I

Obst, P., Zinkiewicz, L., & Smith, S. G. (2002). Sense of community in science fiction fandom, Part 1: Understanding sense of community in an international community of interest. *Journal of Community Psychology*, *30*(1), 87–103. https://doi.org/10.1002/jcop.1052

Özer, Ö., Özkan, O., Budak, F., & Özmen, S. (2021). Does social support affect perceived stress? A research during the COVID-19 pandemic in Turkey. *Journal of Human Behavior in the Social Environment*, *31*(1-4), 134–144. https://doi.org/10.1080/10911359.2020.1854141

Peterson, N. A., Speer, P. W., & Hughey, J. (2006). Measuring sense of community: A methodological interpretation of the factor structure debate. *Journal of Community Psychology*, *34*(4), 453–469. https://doi.org/10.1002/jcop.20109

Prati, G., & Cicognani, E. (2018). School sense of community as a predictor of well-being among students: A longitudinal study. *Current Psychology*, *40*, 939–943. https://doi.org/10.1007/s12144-018-0017-2

Reese, G., Proch, J., & Finn, C. (2015). Identification with all humanity: The role of self-definition and self-investment. *European Journal of Social Psychology*, *45*(4), 426–440. https://doi.org/10.1002/ejsp.2102

Reich, S. M. (2010). Adolescents' sense of community on myspace and facebook: A mixed-methods approach. *Journal of Community Psychology*, *38*(6), 688–705. https://doi.org/10.1002/jcop.20389

Rovai, A. P., & Jordan, H. M. (2004). Blended learning and sense of community: A comparative analysis with traditional and fully online graduate courses. *The International Review of Research in Open and Distance Learning*, 5(2), 1–13. https://doi.org/10.19173/irrodl.v5i2.192

Sani, F., Herrera, M., Boroch, O., & Gulyas, C. (2012). Comparing social contact and group identification as predictors of mental health. *British Journal of Social Psychology*, 51(4), 781–790. https://doi.org/10.1111/j.2044-8309.2012.02101.x.

Sani, F., Madhok, V., Norbury, M., Dugard, P., & Wakefield, J. R. (2015). Greater number of group identifications is associated with healthier behaviour: Evidence from a Scottish community sample. *British Journal of Health Psychology*, 20(3), 466–481. https://doi.org/10.1111/bjhp.12119

Semenza, J. C., March, T. L., & Bontempo, B. D. (2007). Community-initiated urban development: An ecological intervention. *Journal of Urban Health*, 84(1), 8–20. https://doi.org/10.1007/s11524-006-9124-8

Sibley, C. G., Greaves, L. M., Satherley, N., Wilson, M. S., Overall, N. C., Lee, C. H., ... Barlow, F. K. (2020). Effects of the COVID-19 pandemic and nationwide lockdown on trust, attitudes toward government, and well-being. *American Psychologist*, 75(5), 618–630. https://doi.org/10.1037/amp0000662

Stürmer, S., Christ, O., Jonkmann, K., Josephs, I., Gaschler, R., Glöckner, A., ... Salewski, C. (2018). 10 Jahre universitäres Fernstudium in Psychologie an der FernUniversität in Hagen [Ten years of university-level distance learning in psychology at the University of Hagen]. *Psychologische Rundschau*, 69(2), 104–108.

Syrek, C., Bauer-Emmel, C., Antoni, C., & Klusemann, J. (2011). Entwicklung und Validierung der Trierer Kurzskala zur Messung von Work-Life Balance (TKS-WLB) [Development and validation of the Trierer scale to measure work-life balance (TKS-WLB)]. *Diagnostica*, 57, 134–145. https://doi.org/10.1026/0012-1924/a000044

Tajfel, H., Turner, J. C., Austin, W. G., & Worchel, S. (1979). An integrative theory of intergroup conflict. In M. J. Hatch & M. Schultz (Eds.), *Organizational identity: A reader* (pp. 56–65). Oxford, England: Oxford University Press.

Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., ... Stewart-Brown, S. (2007). The Warwick-Edinburgh Mental Well-being Scale (WEMWBS): Development and UK validation. *Health and Quality of Life Outcomes*, 5(1), 63. https://doi.org/10.1186/1477-7525-5-63

Wilson, J. M., Straus, S. G., & McEvily, B. (2006). All in due time: The development of trust in computer-mediated and face-to-face teams. *Organizational Behavior and Human Decision Processes*, 99(1), 16–33. https://doi.org/10.1016/j.obhdp.2005.08.001

Witherspoon, D., Schotland, M., Way, N., & Hughes, D. (2009). Connecting the dots: How connectedness to multiple contexts influences the psychological and academic adjustment of urban youth. *Applied Developmental Science*, 13(4), 199–216. https://doi.org/10.1080/10888690903288755

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.