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Feeling Isolated and Lonely During Covid-19 Lockdown

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Abstract:

Isolation and loneliness have been associated with negative mood states, sleep disturbances and health problems. People experiencing pandemic lockdowns are susceptible to feelings of isolation and loneliness. In this Survey Monkey study conducted during a COVID-19 lockdown (N= 260 respondents), 81% reported feeling isolated and 68% feeling lonely. Correlation analyses suggested that feeling isolated and lonely were related to each other and were, in turn, negatively related to health practices scale scores and positively related to scores on scales measuring COVID-related stress, negative mood states including anxiety and depression, fatigue, sleep disturbances, and posttraumatic stress symptoms. Analyses of variance revealed significant differences between isolated and non-isolated groups as well as between lonely and non-lonely groups on these measures. Only a weak correlation was noted between living alone and loneliness, suggesting that feelings of isolation and loneliness extended to those living with others as well. Positive correlations between both feeling isolated and lonely and time on Facebook and gaming suggested that these activities did not compensate for their isolated and lonely feelings. Feelings of isolation and loneliness and their associated problems also increased across the lockdown survey period. The lack of touch and exercise suggested that those activities might have alleviated the negative feelings and associated problems. The results of this survey are limited by the self-reported data from a non-representative sample that is cross-sectional. Nonetheless, they highlight the negative effects of isolation and loneliness during a COVID-19 lockdown.

Introduction

In a COVID-19 lockdown survey, stress was not only related to feeling touch deprived but to also feeling isolated and lonely.[1] Social isolation has alternately been referred to as loneliness, and loneliness has been defined as the perception of social isolation.[2] In some studies, loneliness has been correlated with isolation[3] and in others it has only been weakly correlated.[4] Some living alone may not feel lonely and those living with others may feel lonely. Nonetheless, those mood states have been used interchangeably in the literature that preceded COVID-19.

Isolation and loneliness have been associated with negative mood states including anxiety and depression,[5] sleep disturbances,[5] and health problems.[6] As the latter authors suggested, loneliness can enhance the symptom cluster of depression and fatigue that can, in turn, increase the risk of immune dysfunction.[6] And, inflammation has been identified as being related to loneliness and elevated stress hormone (cortisol) levels.[5] These effects have been studied in chronically lonely individuals during non-pandemic times. People experiencing pandemic lockdowns like that of COVID-19 might be susceptible to feelings of isolation and loneliness which are more acute than chronic but which might be expected to have negative effects that are similar to those of chronic loneliness. COVID-19 lockdowns afford the

opportunity to study these mood states in a sample who might be experiencing lockdown-related loneliness.

The negative effects of loneliness on mood states, sleep disturbances and health problems may be mediated by touch deprivation[7] as well as less physical activity.[5,7] COVID-19 samples have not only been touch deprived but they have been less actively working at home and getting less exercise.[7] Less exercise, in turn, was associated with depression and fatigue.[7] Although 27% of the COVID-19 sample reported engaging in exercise "a lot", as many as 17% responded "not at all" to getting exercise.[7] And, exercise has been noted to reduce depression, anxiety and sleep disturbances.[8-10] Touch deprivation and lack of activity may also contribute to the associations reported between loneliness and several negative problems including anxiety,[5] depression [11]fatigue [6] and sleep problems.[5] Negative mood states and sleep disturbances may, in turn contribute to compromised immune function.[6]

Loneliness (social isolation) is thought to increase activation of the hypothalamic pituitary axis (HPA).[5] Cortisol, as the HPA stress hormone that is then increased, compromises immune function by reducing natural killer (NK) cell number and NK cell activity, which, in turn, kill viral cells, for example, HIV cells.[12] Although NK cells and NK cell activity have enhanced immune function in HIV, their effects on immune function in COVID-19 are unknown. Exercise would be expected to enhance immune function via the stimulation of pressure receptors under the skin, in turn, increasing vagal activity, decreasing cortisol and increasing NK activity.[13]

The purpose of the present data analyses was to assess the effects of feelings of isolation and loneliness on health activities, COVID-related stress, anxiety, depression, fatigue, sleep disturbances, and PTSD symptoms in individuals experiencing the COVID-19 lockdown. Feelings of isolation and loneliness were expected to be associated with less healthy activities, COVID-related stress, negative mood states including anxiety and depression, fatigue, sleep disturbances and PTSD symptoms. All of these problems were also expected to worsen over the course of the pandemic lockdown.

Methods

Participants

A G* power analysis indicated that a sample size of 224 was required for an alpha of .05 and 80% power. The participants included individuals (N=260) who ranged in age from 18-82 (M=47 years). Gender was distributed 79% female, 18% male and 3% other (non-specified). Ethnicity was distributed 68% Non-Hispanic White, 21% Hispanic, 3% Black and 8% other (non-specified). Professions were distributed 35% office worker, 30% academic, 15% managerial, 12% medical and 8% labor. The average income was $72,572, 28% were unemployed and 69% worked at home. Twenty-three per cent lived alone.

Procedure

A flyer was posted on Facebook giving a brief description of the study including some sample items and the age criterion being greater than 18 years. The Facebook flyer included a link to the survey on Survey Monkey which included 11 scales for a total of 87 items. The survey was four weeks duration (April 1-30, 2020), and the data were directly transported to SPSS for data analyses.

Measures

The survey included several demographic items including those already mentioned (age, gender, ethnicity, profession, income, type of employment, working at home, and living alone). The following five scales were created specifically for this survey to relate to activities and stress associated with the COVID-19 lockdown.[1] The participants rated the items on the scales from zero meaning "not at all" to three meaning "a lot" including the:

1) **Health Scale** (15 items) (Cronbach's alpha=.66) which included exercise (inside exercise, outside exercise and outside exercise with others as well as the types of exercise), touching (touching partner, kids and self as well as the types of touching), COVID- 19- related safety

practices including washing hands and social distancing, self-care, spiritual activities (meditating and feeling spiritual), and liking being at home;

2) **Media/Communications Scale** (10 items) (Cronbach's alpha=.58) including talking on the phone, texting, on Internet, gaming, on Facebook/Instagram, spending time receiving and sending messages/media about the virus, engaging in Zoom/Skype/Facetime activities (e.g. Yoga, meditation), watching the news, watching other TV programs, and watching movies;

3) **Connecting Scale** (4 items) (Cronbach's alpha=.41) which included connecting with friends, trying to connect with old friends, helping children do homework, and receiving support from others;

4) **Working Scale** (6 items) (Cronbach's alpha=.61) including cooking, caregiving, housekeeping, paperwork, creative work, and working on projects/hobbies; and

5) **Stress Scale** (11 items) (Cronbach's alpha=.78) which included worrying about getting a virus, worrying about your financial status, wanting this experience to end, feeling isolated, feeling lonely, feeling bored, feeling touch deprived, snacking, drinking alcohol, napping, and getting "cabin fever".

The standardized scales on the survey included 4 PROMIS Subscales[14] (each item was rated on a 5-point scale as 1= never, 2= rarely, 3= sometimes, 4= often, and 5= always) which included the:

1) **PROMIS Anxiety Subscale** (4 items) (Cronbach's alpha=.88) which included I felt fearful, I found it hard to focus on anything other than my anxiety, my worries overwhelmed me, and I felt uneasy;

2) **PROMIS Depression Subscale** (4 items) (Cronbach's alpha=.91) including I felt worthless, helpless, depressed, and hopeless;

3) **PROMIS Fatigue Subscale** (3 items) (Cronbach's alpha=92) including I felt fatigued, I had trouble starting things because I'm tired, and I felt run-down; and

4) **PROMIS Sleep Disturbance Subscale** (4 items) (Cronbach's alpha =.86) which included my sleep quality was bad, my sleep is not refreshing, I had a problem with my sleep, and I had difficulty falling asleep.

The second standardized scale was a PTSD Screener entitled "**PTSD-8: A short PTSD Inventory**" (8 items) (Cronbach's alpha=.92).[15] This inventory is introduced by the statement "If you're being reminded of a traumatic experience, please rate how much the following have bothered you during the lockdown" as: 0) not at all, 1) rarely, 2) sometimes, and 3) most of the time. The items are: recurrent thoughts and memories of the event, feeling as though the event is happening again, recurrent nightmares about the event, sudden emotional or physical reactions when reminded of the event, avoiding activities that remind you of the event, avoiding thoughts or feelings associated with the event, feeling jumpy/easily startled, and feeling on guard.

The last item on the COVID-19 Lockdown Activities survey was an open-ended question "Please tell us about anything you feel that has been positive about the lockdown." Survey Monkey then provided a listing of the most frequently used words and their percentiles for that item.

Results

Correlation Analyses Yielding Significant Coefficients for Feeling Isolated and Lonely

Correlation analyses yielded very similar results for both feeling isolated and feeling lonely, so they are grouped together here. Results indicated that 81% of the sample reported feeling isolated (ratings of 0 (19%), 1 (31%), 2 (24%), 3 (26%) a lot) and 68% of the sample reported feeling lonely (0 (33%), 1 (30%), 2 (17%), 3 (21%) a lot). Correlation analyses revealed a number of significant correlation coefficients for both the feeling isolated and feeling lonely ratings (at the $p<.05$ level with most at the $p=.000$ level) including the correlation between feeling isolated and feeling lonely ($r=.82$) and a weak

correlation for the demographic variable of more often **"living alone" (**r=-.18, but only for the feeling lonely rating) and the following significant correlations (see table 1 for the correlation coefficients for the total scale scores): 1) for the **Health Scale** total score, and the items including less indoor exercise, less touching partner (only for lonely), less self-touch, less liking being home, less self-care, and feeling less spiritual; 2) for items on the **Media/Communication Scale** including more internet (only for lonely), gaming, Facebook, and messaging about the virus (only the lonely); 3) on the **Working Scale** for the items including less homework with kids, less cooking, and less housework (but only for the lonely on these items); 4) for the total score on the **Stress Scale** and for its items including greater worrying about the virus, worrying about finances, wanting this experience to end, feeling isolated/ lonely, bored and touch deprived and greater snacking (only for the lonely), drinking alcohol, napping, and cabin fever; 5) for the **PROMIS Anxiety Subscale** total score and all its items (feeling fearful, focus on anxiety, overwhelming worries and feeling uneasy); 7) for the total score on the **PROMIS Depression Subscale,** and all its items including feeling worthless, helpless, depressed, and hopeless; 8) for the total score on the **PROMIS Fatigue Subscale,** and all its items including fatigue, tired, and run–down; 9) for the total score on the **PROMIS Sleep Disturbance Subscale,** and all its items including quality of sleep, refreshing sleep, problems with sleep, and falling asleep; and 10) for the total score on the **PTSD-8 Inventory** and all its items including recurrent thoughts or memories, feeling the event is happening again, recurrent nightmares, sudden emotional and physical reactions, avoiding activities that remind you of the event as well as thoughts and feelings associated with the event, feeling jumpy/easily startled and feeling on guard.

Table1. Correlation coefficients for significant relationships between feeling isolated/feeling lonely ratings and scores on COVID-19 Lockdown Activities Survey scales and subscales.

Measure	Correlation coefficient	p level
Health Scale Score	-.24/-.26	.000
Media/Communications Scale Score	.15/.16	.02
Stress Scale Score	.80/.80	.000
PROMIS Anxiety Subscale Score	.58/.61	.000
PROMIS Depression Subscale Score	.61/.69	.000
PROMIS Fatigue Subscale Score	.50/.53	.000
PROMIS Sleep Disturbance Subscale Score	.40/.43	.000
Posttraumatic Stress Inventory Score	.41/.46	.000

Analyses of Variance (ANOVAs) on Feeling Isolated vs. Not Isolated and Feeling Lonely vs. Not Lonely Groups

Again because the results are so similar they are grouped together in this summary. A feeling isolated group (the 81% of the participants who reported feeling "a little to a lot" isolated) was compared to a non-feeling isolated group (the 19% who responded "no" to the feeling isolated rating) via MANOVAs and ANOVAs. The MANOVA for the feeling isolated variable was significant (Wilks' Lambda F=9.72, p=.000, eta^2=.35). The same analyses were conducted for the feeling lonely (68% who reported feeling "a little to a lot" lonely) versus the non-feeling lonely group (the 32% who responded "no" to the feeling lonely rating) (Wilks' Lambda F=17.35, p=.000, eta^2=.49). Virtually all of the variables that were significantly correlated with feeling isolated and feeling lonely were again significant on the group comparison ANOVAs (see tables 2 and 3 for the means and ANOVAs for the scale scores). The only exceptions were that some of the significant correlations were not replicated in the ANOVAs on the group comparisons including texting, zooming, connecting with friends, homework, cooking and housekeeping

Table2. Mean scale scores for significant ANOVAs for feeling isolated versus non-isolated groups (standard deviations in parentheses).

Measure	Isolated	Non-isolated	F value	p level	eta^2
Health	31.37 (5.47)	33.42 (5.31)	4.93	.03	.02
Media	27.17 (3.99)	25.43 (5.09)	6.54	.01	.03
Stress	28.92 (5.55)	19.69 (3.03)	124.14	.000	.33
Anxiety	10.54 (3.43)	6.98 (2.60)	45.57	.000	.15
Depression	9.08 (3.91)	5.33 (2.22)	41.89	.000	.14
Fatigue	8.63 (2.99)	5.69(2.48)	40.64	.000	.14
Sleep Disturbance	14.42(4.34)	11.28 (4.59)	20.64	.000	.08
PTSD	15.24 (5.85)	11.58 (4.87)	11.22	.001	.06

Table3. Mean scale scores for significant ANOVAs for feeling lonely versus non-lonely groups (standard deviations in parentheses).

Measure	Lonely	Non-lonely	F value	p level	eta^2
Health	31.89 (5.67)	32.86 (4.96)	4.74	.03	.02
Media	27.42 (3.99)	25.67 (4.60)	9.63	.002	.04
Stress	29.96 (5.41)	21.54 (3.68)	165.78	.000	.40
Anxiety	11.10 (3.28)	7.33 (2.70)	82.61	.000	.25
Depression	9.72 (3.88)	5.61 (2.22)	81.84	.000	.24
Fatigue	9.05 (2.95)	6.12 (2.47)	62.37	.000	.20
Sleep Disturbance	14.86 (4.30)	11.67 (4.32)	30.58	.000	.11
PTSD	15.84 (5.82)	11.51 (4.69)	23.13	.000	.11

Increased prevalence of these problems across the data collection period

Finally, the percentage increase was calculated for the prevalence of these self-reported problems (feelings, worries, symptoms) as well as potential buffers (connecting, exercise) from the middle of the data collection (two weeks) versus the end of the data collection (one month). As can be seen in table 4, the prevalence of these problems and potential buffers significantly increased across the COVID-19 lockdown period (April 2020) (see table 4).

Table 4. Prevalence (% respondents) of feelings, worries, symptoms and potential buffers at mid-data collection (2 weeks) and end-data collection (1 month) and % increase over that time.

	Mid (2 weeks)	End (1 month)	% Increase
Feelings			
Isolated	58	81	40
Lonely	47	68	45
Touch deprived	42	68	62
Bored	45	70	56
Cabin fever	54	76	41
Worries			
Getting virus	50	87	74
Finances	43	72	67
Symptoms			
Anxiety	73	90	23
Depression	46	72	57
Fatigue	68	85	25
Sleep disturbances	71	91	28
PTSD	37	53	43
Potential buffers			
Connecting	40	65	63
Exercise	28	52	86

Discussion

As in research prior to COVID-19, feelings of isolation and loneliness were highly correlated[3] This highly significant correlation in the present study (r=.82) might be an after of the two items being consecutive ratings such that the feeling of

isolation (which preceded the question on loneliness) primed the feeling of loneliness. However, this isolation/loneliness relationship that has been reported in the pre-COVID literature on chronically lonely individuals[3] appears to apply to those experiencing acute or less than chronic loneliness in this COVID-19 lockdown sample. It is possible that some of the 68% experiencing loneliness in this sample were chronically lonely people who continued to be lonely during the lockdown or even slightly lonely people whose loneliness was exacerbated by the lockdown. The weak correlation between living alone and being lonely in this study suggests that not all people living alone reported being lonely and that loneliness was also being living with others. Nonetheless, the previously reported negative effects for living alone[16] are similar to the negative effects reported by those feeling isolated and lonely in the current study including stress, anxiety, depression, fatigue, sleep disturbances and PTSD symptoms.

The previously reported negative effects of loneliness for chronically lonely pre-COVID people extend to this COVID-19 lockdown sample including stress, anxiety, depression, fatigue, sleep disturbances and PTSD symptoms.[5,6,11,13] That stress was related to loneliness was not surprising as it had been previously reported as the most robust factor in a factor analysis on the stress scale that was designed specifically to tap COVID-related stressors.[1]

Although multiple COVID-19 lockdown studies have reported stress, anxiety, and depression[17-19] as well as sleep disturbances[20,21] and posttraumatic stress symptoms,[22,23] none of these studies have assessed loneliness as a potential contributing factor or resulting effect. In the current study, feelings of isolation and loneliness were highly correlated with these negative conditions (ranging from .14-.82) and group differences between those who did and did not feel isolated or lonely were also highly significant for all of the conditions. However, because of the cross-sectional nature of this study and the absence of baseline data, directionality of effects cannot be determined. These conditions could as easily have preceded the feelings of loneliness, and, in turn, predisposed individuals to loneliness during the lockdown, as suggested by non-pandemic trauma leading to loneliness.[24] The latter authors noted that high levels of PTSD predicted loneliness but that they depended on pre-event levels. Or, as others have noted, anxiety could have mediated the effects of loneliness on depression and sleep disturbances.[25]

That these problems might be more chronic than acute is suggested by the significant increase in the percentage of individuals experiencing these problems by the end of one month of shutdown versus the end of two weeks of shutdown. Increased prevalence was noted for feeling isolated, lonely, touch deprived, cabin fever and stress. And their comorbid conditions became more prevalent including anxiety, depression, fatigue, sleep disturbances and PTSD symptoms. Further, worrying about getting the virus and financial problems became more prevalent. These data might be expected as in what some have called "quarantine fatigue", although, surprisingly, longitudinal data on this increasing prevalence could not be found in the COVID-19 literature. Fortunately, potential buffering activities also increased including connecting with others and exercise.

The current data highlight the potential immune compromising effects of feeling isolated and feeling lonely given the literature on their associations with elevated stress hormones (cortisol) and dampened immune function (low NK cell number and activity).[6] And, the compromised immune function related to feelings of isolation and loneliness may, in turn, predispose individuals to the early mortality associated with loneliness. In a meta-analysis on those relationships, the increased likelihood for early mortality was 26% for loneliness, 29% for isolation and 32% for living alone.[26] These mortality data are based on chronic conditions of loneliness and isolation which may not pertain to pandemics. Some have referred to loneliness in evolutionary theory, as transient as it leads to the re-affiliation motive to reconnect with others.[2,11]

Experiences that might be considered buffers for feelings of isolation and loneliness apparently were not buffers in this sample. For example, living with

others was only weakly negatively correlated with loneliness (r=-.18). Connecting/social support was not correlated with loneliness nor were there differences between the lonely and the not lonely on that scale. Social media was positively correlated, suggesting that those who were lonely engaged in more social media which is consistent with earlier research.[27] In this earlier study, social media was referred to as "phoneliness". These potential buffers apparently were not ameliorating feelings of isolation or loneliness in this COVID-19 lockdown sample.

Touch deprivation was associated with loneliness as were other touch variables including self-touch and self-care. These associations were previously reported on this sample for those who were feeling touch deprived during the COVID-19 lockdown.[7] Touch has been noted to reduce loneliness in a laboratory condition in which lonely participants were simply touched or not touched on the hand.[28] And, hugging has effectively improved immune function[29] as has massage therapy.[12] Those who are feeling lonely during lockdowns might be encouraged to engage in more self-touch, hugging and backrubs. In addition, they might be encouraged to engage in more exercise as exercise was negatively correlated with feelings of isolation and was noted to buffer the effects of touch deprivation in a previous study on this database. [7] Pre-COVID research has also shown negative effects of loneliness on activity levels[5] and positive effects of exercise on chronic loneliness-related conditions including anxiety[30] and sleep disturbances.[10] Additional touch stimulation as in hugging and back rubbing and exercise would be expected to enhance immune function via moving the skin and stimulating pressure receptors under the skin, in turn, increasing vagal activity, decreasing cortisol and increasing NK activity to ward off viral and bacterial cells.[13]

Methodologically, these data are limited by sampling and assessment issues. The sample of predominantly non-Hispanic, white females would be considered non-representative even though it may be a representative Survey Monkey sample. Accordingly, the data would not be generalizable to the larger population. In addition, the self-report data are subject to their questionable bias and reliability. Further, direction of effects or causality cannot be determined from these cross-sectional data. Future studies may compare several different groups including the isolated, the lonely, the isolated and lonely and the neither isolated nor lonely. In addition, standardized scales for isolation and for loneliness may be used rather than rating scales on those variables.

Despite their limitations, these data are suggestive that isolation and loneliness are associated with stress, anxiety, depression, fatigue, sleep problems and PTSD symptoms as well as worries about catching the virus and finances which increased significantly over the course of COVD-19 for this sample. Exercise and other touch stimulation may ameliorate some of the negative effects of feelings of isolation and loneliness during lockdowns like COVID-19.

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