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Letter to the Editor



Changes in social anxiety symptoms and loneliness after increased isolation during the COVID-19 pandemic

Dear editor:

Given the possible changes in social interactions and isolation due to COVID-19, feelings associated with social anxiety may be particularly affected during the pandemic. Social anxiety has been correlated with depression, loneliness and low self-esteem (Schlenker and Leary, 1982). A study conducted in September 2020 indicated that people who had depression before the COVID-19 pandemic experienced more severe symptoms after the onset of the pandemic (Groarke et al., 2020). Less is known about how social anxiety or loneliness might have changed since the onset of the COVID-19 pandemic.

The purpose of this study was to evaluate how the COVID-19 pandemic influenced participants' social anxiety symptoms, social networks and feelings of loneliness. The sizes of participants' social networks were estimated by the number of family members and friends the participants interacted with on a regular basis. Social networks were hypothesized to decrease as a result of widespread lockdown and quarantine measures. If social networks decrease, then it is likely that feelings of loneliness will increase as people will have reduced contacts and interactions with others. Based on these predictions, social anxiety symptoms were hypothesized to increase as individuals might become more anxious when interacting with people as there are fewer opportunities for social interactions.

Participants were asked to complete an anonymous Qualtrics survey composed of 105 items divided into nine question blocks. The first set of questions asked participants to describe basic demographic information. The next two questions were used to assess depressive symptoms over the past two weeks. The following four questions evaluated participants' perceived stress over the past month. For the remainder of the survey, which used widely available and validated measures, participants were asked to complete each of the following sections twice: once while reflecting on life before the COVID-19 pandemic began in the U.S. (approximately March 2020), and a second time while reflecting on their lives at the time the survey was completed in September 2020. The first repeated section assessed social anxiety symptoms, the second repeated section measured social networks, and the final section evaluated loneliness.

Descriptive statistics of all variables were initially calculated to determine means, standard deviations and range. Pairwise t-tests were conducted to determine if the three repeated variables, social anxiety, social network and loneliness, were significantly different before and after the COVID-19 pandemic onset.

Two hundred and four adults aged 18 or older participated in this study. The average age of participants was 30.4 years old (SD=11.2 years old). The majority of participants identified as White (n=158; 81.4%) and non-Hispanic/Latinx (n=180; 92.3%). The sample consisted mainly of women (n=163; 83.2%). Approximately 51% of participants reported that they worked full-time (n=100), 9.7% reported working part-time (n=19), and 27% identified as students (n=53). The majority of participants indicated that they were single or not in a relationship (n=119; 60.7%).

The average score for social anxiety before the COVID-19 pandemic began was 16.35 (SD=14.96) compared to 18.94 (SD=16.39) after the COVID-19 pandemic onset. Pairwise t-test analysis showed that this difference was significant: $t(141)=-3.56, p=0.001$, Cohen's $d=.30$. The average score for a participant's social network before the onset of the COVID-19 pandemic was 18.65 (SD=5.79) compared to 17.30 (SD=5.84) after the pandemic began. Pairwise t-test analysis indicated a significant difference between the two scores: $t(139)=4.61, p<0.001$, Cohen's $d=.39$. The average score for loneliness before the beginning of the COVID-19 pandemic was 18.71 (SD=15.21) compared to 21.64 (SD=15.72) after the pandemic began. Pairwise t-test revealed that loneliness scores were significantly different before compared to after the pandemic began: $t(126)=-2.90, p=0.004$, Cohen's $d=.26$.

After the onset of the COVID-19 pandemic, social anxiety symptoms increased, loneliness worsened, and participants' contact with family and friends decreased. Despite these self-reported changes, symptoms of depression and perceived stress at the time of survey completion were modest. It is possible that the moderate levels of depression and perceived stress might be a result of the sample not being a clinical group. Indeed, because this was not a clinical sample, the observed changes might not be clinically significant. However, they illustrate important trends that warrant further investigation. Overall, the frequency and quality of interactions with social networks decreased after the onset of the pandemic. Due to lockdowns and social distancing measures, many individuals might have been unable to socially interact with the same number of people that they would have before the pandemic. Or, if they have maintained social interactions, the nature of those interactions might be different i.e. virtual or from a safe distance (Hwang et al., 2020). School closings and remote learning have limited contact students are having with both peers and teachers (Courtney et al., 2020). Reduced social networks and frequencies of interactions are likely contributors to increased feelings of loneliness and isolation (Banerjee and Rai, 2020).

The sample was modest in size and likely biased as participants were recruited through the researchers' academic and professional networks. However, effect sizes were in the small-medium range, indicating notable trends. Another limitation was the use of a self-reported survey to collect data, including measures that relied on retrospective reporting over extended and varied periods of time. Although it would have likely been more accurate to have ratings prior to the COVID-19 outbreak, this pandemic was unanticipated. Consequently, we were unable to obtain pre-pandemic

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baseline scores for loneliness, social anxiety symptoms and social networks. This study does not confirm that the COVID-19 quarantines are the sole cause of any changes in social networks, feelings of loneliness or social anxiety. An additional limitation of the study was that the researchers did not formally diagnose participants with social anxiety disorder or other relevant conditions. Despite these limitations, the results were in accordance with the hypotheses and are supported by previous research findings.

Authors' contribution

Claire Thompson and Ethan Moitra designed the protocol and wrote the analyses. Claire Thompson and Ethan Moitra conducted the literature review and analyses. Claire Thompson wrote the first draft of the manuscript. All authors contributed to the final manuscript.

Declaration of Competing Interest

None.

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