Pandemic Dreaming: The Effect of COVID-19 on Dream Imagery, a Pilot Study

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COVID-19 has changed the way that people around the world live their lives, consequentially spurring various mental health difficulties. The current study aimed to determine whether people experienced distinct dream imagery during the early phase of the pandemic in Canada. The dreams of Canadian university students were recorded for 2 weeks during the beginning of Canada's experience with COVID-19. The dream imagery was analyzed and compared to a control group; t tests show that the COVID-19 group had significantly more imagery of location changes, animal, head, food, and virus-related dream imagery compared to the control group. This dream imagery is consistent with previous findings of the dream imagery of individuals experiencing waking day anxiety, suggesting that waking day concerns about COVID-19 may be affecting individual's dream imagery. In addition, the increased amount of imagery related to the virus, food, and head imagery suggests that specific aspects of COVID-19 and the global response are reflected within sleep mentation. As concerns and anxieties regarding the virus are pervasive, affecting many people during both waking and sleep, it is suggested that dream interpretation may be a beneficial approach to alleviating COVID-19-related stress.

Keywords: COVID-19, coronavirus, anxiety, dream imagery

In December of 2019, a novel virus was observed in Wuhan, China, and has since spread across the world (Yuan et al., 2020; Zhang, Wu, & Zhang, 2020). The virus affects the respiratory system and is associated with fever, cough, and fatigue; however, carriers of the virus may experience only mild symptoms (World Health Organization, 2020d). The virus is highly contagious, spreading primarily through the respiratory tract, although additional routes of transmission such as fecal matter and blood have also been identified (Guo et al., 2020; Yuan et al., 2020). Two months after the initial detection, 59 countries had reported confirmed cases of the virus, including China, which had reported a total of 79,968 cases. At this time, there was a total of 87,137 confirmed cases worldwide (World Health Organization, 2020a). In mid-March, the amount of cases in Italy had risen substantially, reporting the second highest number of COVID-19 deaths (Remuzzi & Remuzzi, 2020). The

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rapid spread of the virus was overwhelming to the Italian health care system, which lacked the resources and staff to handle the surge of patients. As a consequence, many health care workers became infected, and hospitals faced being unable to treat everyone suffering from the virus (Remuzzi & Remuzzi, 2020). As the virus continued to spread globally and case numbers grew exponentially, Canada as well as other countries announced shut downs of nonessential services, travel restrictions, stay-at-home measures, and quarantine orders (Chiew, Li, & Lee, 2020; Government of Canada, 2020; Government of Ontario, 2020b; Kucharski et al., 2020; Remuzzi & Remuzzi, 2020). Canadian schools, universities, and colleges were also suspended to ensure the health of the staff and students (Fleming College, n.d.; Government of Manitoba, 2020; Government of Ontario, 2020a; Trent University, n.d.). In the wake of the virus, individuals bought resources in bulk, leaving grocery stores across Canada empty (Cunningham, 2020; Lau, 2020; Saba, 2020). At this time, the total amount of confirmed cases in Canada had reached 138 (World Health Organization, 2020b). A total of 7 weeks later, this had grown to 52,056 confirmed cases (World Health Organization, 2020c).

The situation has impacted not only health care workers and patients but also the general population, resulting in heightened stress and anxiety (Wang et al., 2020; Yuan et al., 2020). It was found that most surveyed people living in China during the epidemic were worried about a family member contracting the virus. It was also found that individuals who were female and were in poorer health were more vulnerable to experiencing more stress, anxiety, and depression (Wang et al., 2020). In the early stages of the epidemic, over half of the sampled population reported moderate to severe psychological effects from the epidemic (Wang et al., 2020). College students in China reported higher levels of anxiety when an acquaintance or family member had COVID-19. In addition, increased COVID-19 related impact to economics, daily life, and academic activities were associated with worsened anxiety. Increased social support and family income stability, however, were suggested to be protective against developing feelings of anxiety (Cao et al., 2020). A similar effect was found in health care workers who had worked with COVID-19 patients. Those who had better social support reported less anxiety and stress, and more self efficacy. Workers who experienced greater anxiety and stress and poorer self efficacy also reported poorer sleep quality. This was likely owed to increased difficulty falling and staying asleep, and more sleep anxiety (Xiao et al., 2020). Parents of children hospitalized during the COVID-19 situation reported higher levels of anxiety compared to parents whose children were hospitalized before to the epidemic (Yuan et al., 2020). Among the children, those hospitalized during the epidemic reported increased levels of depression and anxiety that were also more obvious than that reported by the children hospitalized prior to the epidemic. Higher levels of depression in the children hospitalized during the epidemic was correlated with higher levels of dream anxiety (Yuan et al., 2020). This demonstrates that the waking concerns and stress regarding the virus are also expressed in sleep mentation.

Dreams have been demonstrated to be reflective of waking day events. This theory is explained by the continuity hypothesis, which has gained support in connection to several waking day elements, such as gender, culture, and psychological well-being (King, & DeCicco, 2007; Pesant, & Zadra, 2006; Zanasi, DeCicco, Dale, Musolino, & Wright, 2012). Various forms of health and illness have also

been shown to impact dreams. Events such as pregnancy and surgeries are associated with dream imagery that is distinct from the imagery of individuals who were not experiencing the same health related events (Giordano et al., 2012; Sabourin, Robidoux, Pérusse, & De Koninck, 2018). Poorer physical health or physical functioning has been associated with more dreams involving bodily misfortunes, injuries, illness, and medical imagery. In addition, those who experienced more pain in their waking day lives reported more animal dream content (King & DeCicco, 2007). Poorer emotional well-being and depression were also associated with distinct dream imagery, including more sadness, anger, and aggression imagery (King & DeCicco, 2007). Several studies have examined the dream content of cancer patients. When comparing the dreams of female breast cancer patients to the dreams of noncancer patients, it was found that the two groups experienced dreams that were significantly different from each other. Cancer patients had dreams that were reflective of their medical experience, reporting dreams with more medical figures and events, torso imagery, pain, death, and mentions of the disease. In addition, when interpreting their dreams, women with cancer reported the majority of their dream meanings to be about their illness. This was significantly different from the dream meanings of women without cancer, who interpreted most of their dreams to be about romantic relationships. It was suggested that through interpreting their dreams, cancer patients had been able to gain insight, and decrease waking distress through positive framing and other coping mechanisms (DeCicco, Lyons, Pannier, Wright, & Clarke, 2010). The study thus demonstrates that the dream imagery of female cancer patients is distinct from non cancer patients and suggests that dream interpretation may be a mechanism to decrease the distress associated with the illness. Other studies have supported the therapeutic value of dream interpretation, especially in confronting emotions and death (Goelitz, 2001). An additional study examining the dreams of an individual over the duration of their cancer treatment and remission found that the patient's dreams reflected the corresponding stage of her condition (Calogeras & Alston, 2000). Other less severe illnesses such as the common cold, physical pain, stomach ache, and headaches have also been shown to be associated with experiencing more health-related dreams (Schredl, Adam, Beckmann, & Petrova, 2016). Health has also been shown to influence dream imagery, even when the individual is not directly suffering from an illness in their waking day life. Schredl et al. (2016) determined that waking day health related worries also impact dream imagery. Increased health-related worries were found to yield more dreams that involved the topic of health or illness. These findings demonstrate that both waking-day experiences and thoughts affect dream imagery. In fact, health related worries yielded more health-related dreams than waking day illness did. This suggests that thoughts have more influence over health-related dream imagery than simply experiencing illness (Schredl et al., 2016). Health-related dreams are not experienced exclusively by individuals who have an illness or health problem.

Trauma not experienced directly has also been shown to affect people's dream imagery. The 9/11 attack in New York City and Washington left individuals across the country in psychological distress, displaying increased symptoms of posttraumatic stress disorder, anxiety, and depression (Cohen et al., 2006). Although living outside of the impacted cities, media coverage allowed many people to be exposed to the details of the event, likely explaining the widespread effects of the

catastrophe (Bulkeley, & Kahan, 2008). When comparing the dreams of individuals before and after the events of 9/11, it was found that the dream content from the two time periods were distinct, with those occurring after 9/11 being characterized by increased intensity (Hartmann, & Basile, 2003). An additional study that showed participants footage of the event years after it occurred found that those who viewed the 9/11 DVDs reported dreams that included more negative emotion, and imagery related to the attacks (Davidson & Lynch, 2012). Experiencing a stressful event, even if only through media, can impact psychological wellbeing, and the dream content one experiences. Waking-day psychological distress such as that experienced by the general public during 9/11 has also been demonstrated to be associated with distinct dream content when experienced during other contexts. Waking-day anxiety was associated with more anxiety dream content (Serpe & DeCicco, 2020). Dreams that include more scene changes and animals have also been found to be indicative of increased anxiety (DeCicco et al., 2013; Miller, DeCicco, Dale, & Murkar, 2015;). More specifically, greater amounts of scene changes have been correlated with waking-day catastrophizing (Serpe & DeCicco, 2020).

The Current Study

COVID-19 has changed the way that Canadians live their lives. Because waking-day experiences and thoughts have been shown to affect dream content, it is questioned whether the changed state of global functioning and concerns about the virus affected the dream imagery of individuals during this time period. Studies have shown that COVID-19 has impacted people, regardless of whether or not they are sick with the virus. The global battle with an invisible threat has increased people's stress and anxiety levels (Wang et al., 2020; Yuan et al., 2020). Similar to those who experienced the 9/11 attacks via the news media or through viewing a recording of the events, individuals who were exposed to news regarding the COVID-19 outbreaks were also vulnerable to experiencing changes in their psychological wellbeing. Following this, the current study aimed to determine whether living through a pandemic is associated with changed dream imagery.

Hypothesis

As demonstrated in previous studies, health and health concerns have been associated with dreams that are distinct from healthy individuals, or those less worried about health. Furthermore, indirectly experiencing stressful events have been shown to yield distinct dream imagery (Davidson & Lynch, 2012). It is thus predicted that dream content experienced during the COVID-19 outbreak will be significantly different from dream content recorded prior to the pandemic. Because individuals who are not ill with COVID-19 have reported increased levels of anxiety (Yuan et al., 2020; Wang et al., 2020), it is predicted that participants will report more anxious dream imagery compared to a control group, whose dreams were not recorded during the pandemic. Specifically, it is hypothesized that the COVID-19 participants will report dreams that include more location changes and

animal imagery because these have been linked to higher levels of anxiety (Miller et al., 2015; DeCicco et al., 2013). In addition, it is hypothesized that the COVID-19 group will report more dreams that include virus or health related imagery, such as mentions of the virus, medical imagery, coughing, or being isolated, as per the continuity hypothesis of dreaming (King, & DeCicco, 2007).

Method

Participants

The study included 19 Trent University students who were enrolled in Psychology 1030 or Psychology 2019. A majority of the participants were women (68%, $N = 13$); however the study also included men (32%, $N = 6$). Participants were predominantly between the ages of 18 and 25 (79%, $N = 15$), whereas 11% were between 26 and 30 ($N = 2$); 5% were between 31 and 35 ($N = 1$), and 5% were 36 years of age or older ($N = 1$). Finally, 74% of the sample identified as White ($N = 14$), 11% as Asian ($N = 2$), 11% as Black ($N = 2$), and 5% as South Asian ($N = 1$).

Measures

Demographics questionnaire. Participants completed an online demographics questionnaire that asked them about their age, gender, and race. Additional questions that pertained to the participant's relationship status, and the gender of their partner were included in the original study. Questions were given in multiple choice format, with an option to manually record an alternative response.

Content Analysis of Dreams

Dream content was analyzed using the Hall/Van de Castle coding system (Hall & Van de Castle, 1966). This method utilizes specific inclusion criteria for each dream category to ensure that coding is objectively quantified. To be included in the dream category frequency score, the feeling, action, or object must be clearly stated in the dream journal. This removes any subjectivity that may result from assumptions made by the rater (Schneider & Domhoff, 2019; Domhoff, 2001). The dream categories included in the current analyses included head, extremities, torso, anatomy, animals, food, location change, COVID-19, coughing, medical, and isolation. The total amount of virus-related imagery (Total Virus) included COVID-19, grocery coughing, medical, and isolation dream imagery. Specific inclusion criteria and vocabulary for each dream content category can be found in Appendix Table A1.

Procedure

The dream data used in the current study were collected for a different study, which was halted due to the COVID-19 closure of Trent University. The

original study was approved by Trent University's Department of Psychology Research Experience Sub-Committee. Participants were recruited through Trent University's SONA System, with the knowledge that they could earn a total of 4.25 bonus credits, which would be added to their final grade. Participants booked a time slot through the SONA System, in which they would meet with the researcher in the Trent University Sleep and Dream Lab. Participants were first given a consent form, which outlined the purpose of the study, the timeline of their participation, risks, benefits, and SONA credit compensation for participating. In all, 1.00 SONA credit was given for Part 1 of the original study, in which participants met with the researcher and electronically completed four questionnaires, including a demographics questionnaire. The other three questionnaires pertained to the participant's romantic relationship, and were irrelevant to the current study. Participants were given question prompts to create a unique identifying number. This number was written on all the questionnaires so the responses could be linked to the participant while maintaining their anonymity. At the end of Part 1 of the original study, participants were given a dream journal and were asked to record their dreams for 2 weeks. Instructions were written on the front of the dream journal and asked participants to include as much detail as possible in the dream reports. The same unique identifying number was also written on the front of the dream journal, so the researcher would be able to match questionnaire responses to the corresponding dream journal.

Participants recorded their dreams between February 24, 2020, and March 12, 2020. The dream journals were thus collected between March 9, 2020, and March 13, 2020. Participants were given 3.25 SONA credits for completion of Part 2 of the original study, returning the dream journal to the researcher. Once participants had returned their dream journals, they were given a debriefing form, which explained the purpose of the study, the predictions made by the researcher, and the contact information of the researcher and supervisor. Trent University announced the cancellation of all in person classes, activities, and events on March 13, 2020, causing data collection to stop.

The dreams of the COVID-19 participants were compared to a control group, in which participants completed a demographics questionnaire and kept a dream journal for 2 weeks. The COVID-19 participants were matched to the control group by age and gender. In all, 2 weeks' worth of the control group's dreams were content analyzed and compared to the dreams of the COVID-19 group.

Results

Descriptive Statistics

The dreams were content analyzed using 12 content categories. The descriptive statistics for these categories are shown in Table 1. The total virus category combined the COVID 19, grocery, medical, coughing, and isolation dream content categories.

Table 1
Descriptive Statistics of Dream Content Variables

	COVID-19 group				Control group			
Variable	Range	*n*	*M*	*SD*	Range	*n*	*M*	*SD*
Extremities	0–3	19	0.37	0.83	0–1	19	0.11	0.32
Torso	0–1	19	0.05	0.23	0–1	19	0.05	0.23
Anatomy	0–6	19	0.37	1.38	0–1	19	0.05	0.23
Head	0–2	19	0.47	0.70	0–0	19	0.00	0.00
Animal	0–2	19	0.84	0.83	0–2	19	0.32	0.58
Food	0–5	19	1.16	1.54	0–1	19	0.05	0.23
Location change	0–7	19	1.95	2.32	0–1	19	0.16	0.37
COVID-19	0–2	19	0.16	0.50	0–0	19	0.00	0.00
Grocery	0–3	19	0.26	0.73	0–0	19	0.00	0.00
Medical	0–4	19	0.58	1.17	0–2	19	0.16	0.50
Coughing	0–1	19	0.05	0.23	0–0	19	0.00	0.00
Isolation	0–1	19	0.11	0.32	0–0	19	0.00	0.00
Total virus	0–5	19	1.16	1.64	0–2	19	0.16	0.50

Testing the Hypothesis

Paired *t* tests were conducted to determine if the categorical dream imagery experienced by the COVID-19 group was significantly different from the amount experienced by a control group. See Table 2.

There were significant differences in the amount of animal dream imagery reported by participants during the COVID-19 outbreak ($M = 0.84$, $SD = 0.83$) and the control group ($M = 0.32$, $SD = 0.58$); $t(18) = 2.38$, $p = .029$. In addition, the COVID-19 participants also reported significantly more location changes ($M = 1.95$, $SD = 2.32$) than the control group ($M = 0.16$, $SD = 0.37$); $t(18) = 3.14$, $p = .006$. The total amount of virus related dream content was significantly different between the COVID-19 group ($M = 1.16$, $SD = 1.64$) and the control group ($M = 0.16$, $SD = 0.50$); $t(18) = 2.92$, $p = .009$. Similar to the other dream content

Table 2
t Test Results Comparing the Dream Imagery of COVID-19 Participants to the Control Group

	COVID-19 group		Control group			
Variable	*M*	*SD*	*M*	*SD*	*t*	*p*
Extremities	0.37	0.83	0.11	0.32	1.23	.235
Torso	0.05	0.23	0.05	0.23	0.00	1.00
Anatomy	0.37	1.38	0.05	0.23	0.97	.344
Head	0.47	0.70	0.00	0.00	2.96	.008**
Animal	0.84	0.83	0.32	0.58	2.38	.029*
Food	1.16	1.54	0.05	0.23	3.24	.005**
Location change	1.95	2.32	0.16	0.37	3.14	.006**
COVID-19	0.16	0.50	0.00	0.00	1.37	.187
Grocery	0.26	0.73	0.00	0.00	1.56	.135
Medical	0.58	1.17	0.16	0.50	1.46	.163
Coughing	0.05	0.23	0.00	0.00	1.00	.331
Isolation	0.11	0.32	0.00	0.00	1.46	.163
Total virus	1.16	1.64	0.16	0.50	2.92	.009**

* Significant at .05 or less. ** Significant at .01 or less.

categories, the COVID-19 group reported more total virus-related imagery than the control group. Virus related dream imagery however, was only significantly different between the two groups when comparing the total amount of virus-related imagery as a single score.

Additional Trends

Paired *t* tests were conducted on the remaining dream content categories to determine whether any differences existed between the quantity reported during the COVID-19 time frame, and the control group. The amount of food imagery was significantly different between the COVID-19 group ($M = 1.16$, $SD = 1.54$) and the control group ($M = 0.05$, $SD = 0.23$), with the COVID-19 participants reporting greater amounts of food imagery; $t(18) = 3.24$, $p = .005$. In addition, there was a significant difference between the amount of head dream content reported by the COVID-19 group ($M = 0.47$, $SD = 0.70$) and the control group ($M = 0.00$, $SD = 0.00$); $t(18) = 2.96$, $p = .008$.

Discussion

The dream journals were collected during a time when the total amount of confirmed cases in Canada was considerably low compared to the numbers reported by different countries, however it was still expected that Canadians were being impacted by the virus and the changes associated with it. Through news and other media sources, Canadians were able to be updated about the COVID-19 experiences of other countries. Although participants were likely not directly impacted by the virus when they were completing their dream journal, it is likely that they were still thinking about the virus, and feeling some anxiety or stress as the number of cases continued to increase in Canada, and around the world. It was thus hypothesized that participant's dreams would resemble the dreams of individuals with waking-day anxiety. This hypothesis was supported, as participants who recorded their dreams during the COVID-19 period reported more location changes and animal dream imagery than the control group. These images have been shown to be related to higher levels of waking-day anxiety in previous findings (DeCicco et al., 2013; Miller et al., 2015). In addition to this, the hypothesis that the COVID-19 participants would report more virus-related dream imagery was supported. When the imagery was summed into a total virus category, the COVID-19 participants reported significantly greater amounts than the control group. However, when the COVID-19, grocery, medical, isolation, and coughing dream content categories were compared individually, there were no significant differences in the amounts experienced between the two groups. This seems entirely plausible since the time of data collection was still early in Canada's encounter with the virus. Participants felt the anxiety and stress of the impending health crisis, but did not yet have enough direct exposure with the virus at that time.

In addition to the hypothesized differences in dream imagery, it was also found that those who recorded their dreams during the COVID-19 time period reported dreams involving more food and head dream content. Previous health-related

studies have found that dream imagery of specific body parts have been more prevalent when the body part is related to the patient's waking day illness. For example, women with breast cancer reported dreams that included greater amounts of torso imagery (DeCicco et al., 2010). The COVID-19 participants reported greater amounts of head imagery because COVID-19 can be associated with head or facial imagery, such as coughing, temperature-taking or wearing masks to cover the mouth and nose. Finally, the larger amount of food imagery reported by the COVID-19 group may have been a result of the food and supply hoarding occurring in Canada near the time of the dream journal collection period. Concerns and thoughts regarding food, food shortages, or stocking up on supplies are reflected in dream imagery, resulting in the higher amounts of food imagery. This again supports the continuity hypothesis of dreaming (King & DeCicco, 2007).

Anxiety and stress surrounding the virus was likely partially due to fears about getting sick or dying from COVID-19. Based on this assumption, it might thus be useful for participants, or anyone else experiencing waking day COVID-19 based anxiety, to engage in dream interpretation to lessen these waking day emotions (DeCicco et al., 2010; Goelitz, 2001). Because previous studies have shown that dream interpretation is useful to decrease stress regarding an illness or to address concerns about the illness or death, this may also be a useful method to help the general public reduce their anxiety about getting the virus, or potentially dying of COVID-19 (DeCicco et al., 2010; Goelitz, 2001).

Limitations

Participants in the COVID-19 group reported a higher amount of dream imagery that had previously been associated with waking day anxiety. It was assumed that this waking day anxiety was related to concerns about COVID-19; however it is possible that this anxiety may have been the result of other waking day causes. The data collection period for the current study took place during a potentially stressful time for the university student participants, as they may have been studying for and writing midterm exams. It is possible that this or other waking day concerns unrelated to the virus were the cause of the waking day anxiety, and anxiety related dream imagery.

In addition, only 19 dream journals were collected prior to Trent University being shut down due to COVID-19. As a result, both the COVID-19 group and the control group consisted of relatively small sample sizes.

Future Research

Future research could benefit from including a larger sample size. Ideally this would include individuals who were not experiencing waking day anxiety associated with midterm exams. An additional measure that could be taken to better deduce the waking day source of anxiety is having participants complete a questionnaire that measures their stress and anxiety levels regarding COVID-19. This could include concerns over specific topics such as job security, finances, personal health, the health of their family and friends, and death. The original study from which the

COVID-19 data came from had not intended to examine the dream imagery of individuals during a pandemic, instead having the unforeseen perk of collecting dream journals when the COVID-19 concerns began to gain traction in Canada. As a result, the current study shows that in the early stages of the Canadian pandemic, participants have dream imagery similar to people with waking-day anxiety.

Data collection for the current study took place at a unique time, representing a portion of the population's dreams at the beginning of the Canadian COVID-19 crisis. The situation is changing and developing daily, likely affecting the type and amount of dream imagery experienced. Future studies should account for this, and strive to determine whether the population's dream imagery changes in a way that is consistent with the waking day world. Previous studies involving cancer have shown that a patient's dreams progressed in a way that reflected their journey with the illness and their recovery (Calogeras & Alston, 2000). It thus seems likely that dreams recorded after the school closures, and with the shift to electronic learning and increased mask use would reflect those and other changes that have occurred since the onset of the crisis. With the progression of the pandemic, it is also possible that individuals would report significantly more dream imagery related to the virus such as masks, coughing, or isolation. Future studies should determine the dream imagery of individuals after several months of social distancing, and whether that imagery has changed from the imagery reported in the current study from the beginning of the pandemic. A possible approach to this may include analyzing dreams from of one group of participants, recorded prior to the pandemic, during the pandemic and after the pandemic. This would demonstrate the progression of individual's dream imagery over the course of COVID-19 and normalize personality content variables or confounds resulting from comparing the dreams of different groups.

Finally, previous studies have supported the usefulness of dream interpretation in managing emotions surrounding illness or death (DeCicco et al., 2010; Goelitz, 2001). COVID-19 has caused difficulty for many people, as they may have experienced job loss and are encouraged to remain in their homes, and distance from friends and family. With these isolating changes and the looming fear of contracting the virus and potentially dying, individuals are likely experiencing increased anxiety and stress. It is possible that teaching individuals how to interpret their dreams may be beneficial in reducing some of the COVID-19 related anxiety. Although distinct from content analysis, future research focusing on dream interpretation could be highly efficacious, and may provide people with a method to ease their anxieties, while remaining socially distant.

Conclusion

COVID-19 has spurred global change, affecting people's lives and mental health. The hypothesis made in the current study was supported, indicating that during the beginning of Canada's COVID-19 experience, individuals reported increases in certain COVID-19 related dream imagery, location changes, and animal dream imagery, which have been reported in various studies referenced herein as indicative of waking-day anxiety. These findings suggest that waking day concerns and anxieties regarding COVID-19 were reflected in dream imagery. Data

from the current study were unique, in that it was collected near the beginning of Canada's struggle with COVID-19 and thus, if consistent with the continuity hypothesis, the dream imagery in the current study corresponds to events in this time period. It is possible that the dream content experienced by people continues to change as the status of the virus and the country's response to it progresses. Future studies should examine this progression to determine the changes in individual's dream content not only when compared to a control group but also when compared to the imagery associated with the beginning of the pandemic. Finally, the current study suggests that individuals are experiencing anxiety not only in their waking day lives, but also in their sleep mentation. Future studies examining the usefulness of dream interpretation in relieving those anxieties could also be extremely beneficial.

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Appendix

Table A1
Dream Content Coding Inclusion Criteria

Dream content category	Terms and elements coded under this element
Location change	Character moves locations, arriving at a different location through a means other than self propelled activity (e.g. via plane, car, boat)
Animals	Mention of any animal
Food	Both food and drink
Body parts	
Head	Visible body parts in head region
Extremities	Extremities including fingers, knees, claws, hands
Torso	Visible parts of the torso including shoulders, chest, hips; also body, build and physique
Anatomy	Internal body parts, body secretions such as blood, saliva
Sex	Body parts and organs related to reproduction
Virus	
COVID-19	COVID 19, coronavirus
Grocery store	Shopping in a grocery store, needing to go to the grocery store, being trapped in a grocery store
Medical	Medical workers, medical events (e.g. surgery), medical locations (e.g. hospital), medical paraphernalia (e.g. masks)
Coughing	Any instances of coughing
Isolation	Isolation, quarantine, social distancing