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Anxiety and safety behavior usage during the COVID-19 pandemic: The prospective role of contamination fear

Kelly A. Knowles *, Bunmi O. Olatunji

Department of Psychology, Vanderbilt University, Nashville, TN, USA

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ABSTRACT

The coronavirus (COVID-19) pandemic has broadly increased anxiety and changed individual behavior. However, there is limited research examining predictors of pandemic-related changes, and the majority of existing research is cross-sectional in nature, which limits causal inference. Given functional links with disease avoidance processes, individual differences in contamination fear may be especially relevant in predicting responses to COVID-19. Accordingly, the present study prospectively examines contamination fear and obsessive-compulsive washing symptoms as predictors of anxiety and safety behaviors in response to COVID-19 in a student sample ($N = 108$). To examine specificity, anxiety and safety behaviors in response to seasonal influenza are also examined. In the early stages of the pandemic (March 2020), coronavirus-related anxiety was higher than flu-related anxiety ($d = 1.38$). Obsessive-compulsive washing symptoms also increased from before the pandemic ($d = 0.4$). Although baseline contamination fear and obsessive-compulsive washing symptoms did not significantly predict coronavirus-related anxiety, contamination fear did significantly predict safety behavior usage in response to both COVID-19 and influenza. The specificity of the prospective association between contamination fear and the use of safety behaviors are discussed in the context of the global COVID-19 pandemic and the broader literature on the role of safety behaviors in anxiety.

1. Introduction

In January 2020, a novel coronavirus (2019-nCoV) causing pneumonia-like illness was identified in Wuhan, Hubei province, China and reported to the World Health Organization (WHO, 2020). The illness caused by this virus, identified as Coronavirus disease 2019 (COVID-19), quickly spread beyond China and was declared a global pandemic in mid-March 2020. At that time, the WHO identified 118,319 laboratory-confirmed cases and 4292 deaths globally (WHO, 2020). As of September 2020, COVID-19 has infected over 30 million individuals worldwide, including at least 6.6 million in the United States (Center for Systems Science & Engineering at Johns Hopkins University, 2020). Given the widespread impact of COVID-19, high levels of fear and anxiety are to be expected in the population as a whole. Even in late January 2020, 37 % of Americans reported being "very concerned" about the novel coronavirus (Morning Consult, 2020), though at the time only 2 cases had been identified in the United States (World Health Organization, 2020). In the same poll, 62 % of Americans reported being more concerned about the novel coronavirus compared to influenza.

In addition to high levels of anxiety, a number of behavioral changes have been observed in the public in response to the COVID-19 pandemic. In order to maintain public health and mitigate the spread of COVID-19, the WHO and Centers for Disease Control (2020b, CDC, 2020a, 2020c) have recommended that the public implement a number of safety behaviors including frequent handwashing, physical distancing, and wearing masks or face coverings in public. While these behaviors are essential to good public health in the face of a pandemic, they can also be maladaptive when done in excess and in the absence of a probable threat. Indeed, such behaviors are commonly seen among individuals with contamination-focused obsessive-compulsive disorder (OCD). For example, individuals with contamination-focused OCD may carry hand sanitizer with them at all times, wash their hands excessively, frequently disinfect surfaces, and use barriers such as gloves or masks in order to limit their contact with perceived contamination. While these behaviors may be appropriate in the context of a pandemic, they are often carried out to such an extent in OCD that they become maladaptive, lasting for hours per day, causing high levels of distress, and interfering with functioning in everyday life.

* Corresponding author at: Wilson Hall 312, Department of Psychology, Vanderbilt University, PMB 407817, 2301 Vanderbilt Place, Nashville, TN 37240-7817, USA.
E-mail address: kelly.a.knowles@vanderbilt.edu (K.A. Knowles).

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Feeling anxious and engaging in an increased number of safety behaviors in response in COVID-19 is an adaptive response to a real threat, especially in the early stages of the pandemic: rapidly increasing numbers of both cases and deaths, a high degree of uncertainty in how and where the virus is spreading, no known cure or effective vaccine, strong appeals from the media about the danger of the virus and importance of measures such as physical distancing, and real risk of contact with a potential pathogen. The threat of COVID-19 differs from threats posed by other common illnesses, such as influenza, that are common, have widely available treatments or vaccines, and pose low levels of risk to otherwise healthy individuals. It is not yet known, however, what factors predispose an individual to high levels of anxiety during a pandemic. Earlier work examining responses to the Ebola and H1N1 outbreaks similarly found that fear of contracting these diseases was correlated with overall distress (Blakey, Reuman, Jacoby, & Abramowitz, 2015; Wheaton, Abramowitz, Berman, Fabricant, & Olatunji, 2012). However, such studies are cross-sectional in nature, which makes causal inferences difficult.

Fear of contamination is also likely to be a robust prospective predictor of distress associated with COVID-19. Contamination fear refers to "an intense and persisting feeling of having been polluted, dirtied, or infected, or endangered as a result of contact, direct or indirect, with an item/place/person perceived to be soiled, impure, dirty, infectious, or harmful" (Rachman, 2006, p. 9). Individual differences in contamination fear may be especially robust predictors of concerns about COVID-19, perhaps even more so than for other illnesses. COVID-19 is likely at least twice as contagious as the flu, with the average person infected with COVID-19 transmitting the virus to between 2 and 2.5 individuals (Wu, Leung, & Leung, 2020; Zhang et al., 2020; see also Liu, Gayle, Wilder-Smith, & Rocklöv, 2020, Table 1), while individuals with seasonal influenza transmit the virus to 1.3 other individuals on average (Biggerstaff, Cauchemez, Reed, Gambhir, & Finelli, 2014). Fear of contamination is thought to increase an individual's ability to detect and avoid potential threats of pathogens in their environment (Neuberg et al., 2011 Neuberg, Kenrick, & Schaller, 2011). Indeed, research has shown that contamination fear is associated with increased disgust proneness (Deacon & Olatunji, 2007) that may function to motivate avoidance of potential pathogens (Oaten, Stevenson, & Case, 2009). In the context of COVID-19, those with a preexisting fear of contamination would be more likely to avoid interactions with strangers and limit contact with high-touch objects, such as elevator buttons or PIN pads.

Contamination fear is also associated with washing and cleaning behaviors that can reduce infection risk after potential pathogen exposure (Rachman, 2004). Indeed, research has shown that contamination fearful individuals who are prone to experiencing disgust report lower rates of recent infection (Stevenson, Case, & Oaten, 2009). However, engaging in safety behaviors such as excessive washing and cleaning can have negative consequences even among healthy individuals. In a study of non-anxious individuals, those assigned to perform additional health-related safety behaviors endorsed greater increases in health anxiety and contamination fear after one week compared to individuals assigned to simply monitor such behaviors (Olatunji, Etzel, Tomarken, Ciesielski, & Deacon, 2011). Although it is commonly assumed that anxiety about one's health drives changes in behavior, it may also be the case that health behaviors in turn increases disease-related anxiety. Therefore, it is important to examine how fear of contamination may differentially relate to disease-related anxiety compared to disease-related safety behavior in the context of COVID-19.

The present study examines the extent to which contamination fear and obsessive-compulsive washing symptoms prospectively predict COVID-19 and influenza-related anxiety and safety behaviors in a sample of undergraduates, who were surveyed at the beginning of the semester in January 2020 and again in late February through March 2020. Influenza is a presumably weaker threat context to compared to COVID-19 given lower rates of mortality. Estimates of seasonal influenza mortality typically fall around 0.01 % (CDC.gov; Goldstein, Viboud, Charu, & Lipsitch, 2012), while early research suggests that 1.38 % of coronavirus cases in China were fatal (Verity et al., 2020). Thus, comparing responses to COVID-19 and the flu allows for an examination of specificity. Due to the primacy of the threat of COVID-19 and its extensive coverage in the media during the survey period, coronavirus-related anxiety is predicted to be higher than influenza-related anxiety (Hypothesis 1). Obsessive-compulsive washing symptoms are expected to increase from baseline to the follow-up assessment, reflecting an adaptive change in behavior associated with a realized change in threat (Hypothesis 2). Finally, baseline contamination fear and obsessive-compulsive washing symptoms are expected to predict coronavirus anxiety and associated safety behaviors. Coronavirus anxiety is likely high among most participants surveyed in late February through March 2020, given the timeline of this threat. However, contamination fear may be more strongly related to coronavirus-related safety behaviors than coronavirus anxiety, given that safety behavior usage may be a more direct method of coping with contamination concerns (Hypothesis 3). For comparison, baseline contamination and obsessive-compulsive washing symptoms are also examined as predictors of influenza anxiety and associated safety behaviors.

Table 1
Descriptive Statistics ($N = 108$).

	M (SD)	Range
PI (Time 1)	9.23 (5.94)	0–26
OCI-R Washing (Time 1)	1.87 (2.19)	0–9
OCI-R Washing (Time 2)	2.93 (2.83)	0–10
CAI (Time 2)	23.83 (8.56)	0–39
CSBS (Time 2)	39.88 (17.95)	3–90
IAI (Time 2)	13.84 (5.54)	4–31
ISBS (Time 2)	17.93 (14.06)	0–75
Survey Date (Time 2)	March 13, 2020 (8.66 days)	February 27, 2020 – March 26, 2020

Note: CAI = Coronavirus Anxiety Inventory; CSBS = Coronavirus Safety Behavior Survey; IAI = Influenza Anxiety Inventory; ISBS = Influenza Safety Behavior Inventory; OCI-R Washing = Obsessive-Compulsive Inventory-Revised, washing subscale; PI = Padua Inventory Contamination Subscale.

2. Method

2.1. Participants and procedure

In mid-January 2020, undergraduate students at a private southeastern university were contacted as part of the departmental screening process for research participation. Undergraduates completed the Padua Inventory – Contamination Obsessions and Washing Compulsions Subscale (PI; Burns, Keortge, Formea, & Sternberger, 1996) and Obsessive-Compulsive Inventory – Revised (OCI-R; Foa et al., 2002) washing subscale (Time 1). Undergraduates were recontacted on February 27, 2020 with an invitation to complete a follow-up coronavirus survey in exchange for course credit (Time 2). Reminder emails were sent weekly to students who did not respond to the survey until the survey was closed on March 26, 2020. A total of 189 undergraduate students completed the coronavirus survey, 108 of whom had valid baseline data. The sample was primarily female (75 %) and majority Caucasian (57.4 %), with ages ranging from 18 to 22 ($M = 19.62$ years, $SD = 1.21$). The research was approved by the Institutional Review Board.

2.2. Measures

The *Padua Inventory Contamination Subscale* (PI; Burns et al., 1996) is a 10-item self-report questionnaire designed to assess fear of contamination. Items are rated on a Likert scale from 1 (not at all) to 5 (very

much). Higher scores on this inventory indicate more contamination fear. In the present sample, the PI was found to have good internal consistency (α = .82).

The *Obsessive-Compulsive Inventory-Revised* (OCI-R; Foa et al., 2002) is an 18-item self-report measure of OC symptoms in the past month. The OCI-R consists of 6 subscales measuring specific categories of OC symptoms (washing, checking, ordering, neutralizing, hoarding, obsessing). Participants rate items based on how much the experience has bothered them during the past month from 0 (not at all) to 5 (extremely). Only the washing subscale is reported in the present study. The OCI-R had good internal consistency in the present study (α = .89), while the 3-item washing subscale had marginal internal consistency (α = .65)

2.2.1. The Coronavirus Anxiety Inventory (CAI)

The CAI is a 10-item measure designed for the present study to assess anxiety related to the novel coronavirus (COVID-19). This measure was adapted from previous measures used to examine anxiety in response to Ebola (Blakey et al., 2015) and H1N1 (Wheaton et al., 2012). A sample item is "To what extent has the threat of the coronavirus influenced your decisions to be around people?" Items are rated from 0 (not at all) to 4 (very much). The full list of items, along with factor loadings, is presented in Supplemental Table 1. In the present sample, the CAI demonstrated good internal consistency (α = .89). A principal components analysis (PCA) suggested that 9 of 10 items loaded onto a single factor, with component values higher than 0.63. Item 7 (If you did become infected with the coronavirus, to what extent are you concerned that you will be severely ill?) did not load onto this factor; removing this item did not substantially impact the results, and the full scale is presented for completeness.

2.2.2. The Coronavirus Safety Behaviors Scale (CSBS)

The CSBS is a 9-item measure designed for the present study to assess changes in behavior in response to the coronavirus. This measure was similarly adapted from prior studies on Ebola and H1N1 (Blakey et al., 2015; Wheaton et al., 2014). Participants rate the degree to which they have done each of nine safety behaviors in response to concerns about the coronavirus (e.g., washing your hands, checking the internet for information on the coronavirus) on a scale of 0 (none) to 10 (extreme amount). The full list of items, along with factor loadings, is presented in Supplemental Table 2. In the present sample, the CSBS demonstrated good internal consistency (α = .87). The PCA suggested all nine items loaded onto a single component, with all factor loadings higher than 0.44.

2.2.3. The Influenza Anxiety Inventory (IAI)

The IAI is identical to the CAI, except that each item references concerns about "the flu." Item means and factor loadings are presented in Supplemental Table 3. In the present sample, the IAI demonstrated good internal consistency (α = .82). The PCA did not suggest that a single component solution was appropriate for the IAI. A 2-component solution best fit the data, with Item 4 (How likely is it that someone you know could become infected with the flu?) and Item 6 (How much exposure have you had to information about the flu?) loading onto an additional component. However, several other items (3, 5, 7, 8, 9) had salient loadings on both components, suggesting that a single factor may also be interpretable.

2.2.4. The Influenza Safety Behaviors Scale (ISBS)

The ISBS is identical to the CSBS, except that participants are asked to rate their behaviors related to concerns about influenza (the flu). Item means and factor loadings are presented in Supplemental Table 4. In the present sample, the IFI demonstrated excellent internal consistency (α = .91). The PCA suggested all nine items loaded onto a single component, with all factor loadings higher than 0.52.

2.3. Data analysis

First, paired comparisons *t*-tests were used to compare coronavirus-related anxiety and influenza-related anxiety, as well as coronavirus safety behaviors and influenza safety behaviors. Next, a paired comparisons *t*-test was conducted to examine changes in obsessive-compulsive washing symptoms from baseline to the early stages of the COVID-19 pandemic in the United States. For the prospective analyses examining contamination fear and obsessive-compulsive washing symptoms as predictors of coronavirus and flu anxiety and safety behaviors, partial Pearson correlations controlling for the date on which the survey was taken were conducted. Given a sample size of $N = 108$, we achieved adequate power (> 0.80) to detect small-to-moderate effect sizes ($d \geq 0.28$) and moderate correlations ($r \geq 0.27$).

3. Results

Descriptive statistics for each measure are listed in Table 1. Participants reported a wide range of contamination fear (PI range 0–26), suggesting generalizability of results to the general population. Of these participants, 20.4 % had PI scores of 14 or higher, which is consistent with the clinical mean in patients with contamination-focused OCD (Burns et al., 1996).

Hypothesis 1. Coronavirus Anxiety vs. Influenza Anxiety

Mean coronavirus anxiety ($M = 23.83$, $SD = 8.56$) was significantly higher than mean influenza anxiety ($M = 13.84$, $SD = 5.54$), $t(107) = 10.54$, $p < .001$, $d = 1.38$. Similarly, participants performed significantly more safety behaviors in response to the coronavirus ($M = 39.88$, $SD = 17.96$) compared to influenza ($M = 17.93$, $SD = 14.06$), $t(107) = 12.57$, $p < .001$, $d = 1.38$. These very large effect sizes suggest that coronavirus anxiety, and safety behaviors performed in response to the coronavirus, are much greater than for influenza.

Hypothesis 2. Change in Obsessive-Compulsive Washing Symptoms

Overall, the mean level of obsessive-compulsive washing symptoms increased from baseline (mid-January), $M = 1.87$, $SD = 2.19$, to the time of the coronavirus survey (February 27 – March 26, 2020), $M = 2.86$, $SD = 2.76$. This increase in washing symptoms was significant and represented a medium-sized effect, $t(106) = 3.84$, $p < .001$,

Table 2
Prospective relationships between flu and coronavirus anxiety and safety-behaviors and proposed risk factors, $N = 108$.

	Survey Date	PI	OCI-R Washing	CAI	CSBS	IAI	ISBS
PI	−.26**	–	.80**	−.03	.26**	.12	.21*
OCI-R Washing	−.16	.81**	–	−.02	.15	.08	.22*
CAI	.58**	−.18	.12	–	.57**	.26**	.29**
CSBS	.50**	.08	.30**	.69**	–	.44**	.54**
IAI	−.24*	.17	.20*	.07	.25**	–	.65**
ISBS	−.16	.24*	.31*	.14	.38**	.67**	–

Note. * $p < .05$; ** $p < .01$. Below the diagonal – raw Pearson correlation; above the diagonal – partial correlation controlling for survey date. PI = Padua Inventory Contamination Subscale; OCI-R Washing = Obsessive-Compulsive Inventory-Revised, washing subscale; CAI = Coronavirus Anxiety Inventory; CSBS = Coronavirus Safety Behavior Survey; IAI = Influenza Anxiety Inventory; ISBS = Influenza Safety Behavior Inventory.

$d = 0.4$.

Hypothesis 3. Contamination Fear and Baseline Washing Symptoms as Predictors of Disease-Related Anxiety and Safety Behaviors

After controlling for survey date, contamination fear did not significantly predict coronavirus anxiety, $r(105) = -0.03$, $p = .77$, or influenza anxiety, $r(105) = 0.12$, $p = .23$. Baseline washing symptoms also did not significantly predict coronavirus anxiety, $r(104) = -0.02$, $p = .84$, or influenza anxiety, $r(104) = 0.08$, $p = .42$. However, contamination fear did significantly predict both coronavirus safety behaviors, $r(105) = .26$, $p = .008$, and influenza safety behaviors, $r(105) = .21$, $p = .03$. Baseline washing symptoms did not significantly predict coronavirus safety behaviors, $r(104) = 0.15$, $p = .11$. However, baseline washing symptoms did significantly predict influenza safety behaviors, $r(104) = .22$, $p = .03$. Table 2 displays partial correlations among contamination fear, baseline washing symptoms, and disease-related anxiety and safety behaviors.

4. Discussion

The present study explored the prospective relationships among contamination fear, obsessive-compulsive washing symptoms, anxiety and safety behaviors performed in response to COVID-19, and anxiety and safety behaviors performed in response to the common flu. As anticipated, individuals demonstrated increased obsessive-compulsive washing behaviors in late February/March 2020 compared to before the COVID-19 pandemic. Additionally, participants reported higher levels of anxiety and a greater number of safety behaviors in response to COVID-19 compared to the flu, which is consistent with the higher disease threat associated with COVID-19. Overall, participants endorsed moderately high coronavirus-related anxiety, which is consistent with anxiety reported in response to H1N1 influenza (Wheaton et al., 2012) and higher than for Ebola, which never reached pandemic status in the United States (Blakey et al., 2015). However, pre-pandemic contamination fear and obsessive-compulsive washing symptoms did not significantly predict coronavirus anxiety. One potential explanation for these results is that we did not achieve adequate power to detect small correlations ($r < 0.27$) in the present sample. Alternatively, other factors not assessed in the present study, such as perceived risk due to health status, amount of media coverage consumed, or potential coronavirus exposure, may better account for the majority of the variance in coronavirus-related anxiety (Mertens, Gerritsen, Duijndam, Salemink, & Engelhard, 2020). Indeed, the date on which the survey was taken was strongly associated with coronavirus-related anxiety ($r = .58$), reflecting the rapidly changing environment and flow of information related to COVID-19 at the time.

Although pre-pandemic contamination fear did not predict disease-related anxiety, it did significantly predict safety behaviors in response to both COVID-19 and the flu. While some behavioral change may be a direct result of recommendations from public health officials (see https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/index.html), other safety behaviors measured by our survey, such as seeking reassurance from others and searching for information on the coronavirus online, were not recommended by public health officials and may be primarily driven by anxiety. Indeed, coronavirus anxiety and coronavirus-related safety behaviors were strongly correlated ($r = .57$) in the present study. This finding suggests that current anxiety about the coronavirus may motivate the use of safety behaviors perhaps as a means of regulating anxiety responses. However, it is important to note that the strong correlation between coronavirus anxiety and coronavirus-related safety behaviors does not account for all the variance in safety behavior usage, which may also be affected by social pressures, political affiliation, health status, or other factors yet to be explored.

While safety behaviors are often a consequence of anxiety, previous studies have also found that health-related safety behaviors increase overall contamination fear and health anxiety (Deacon & Maack, 2008; Olatunji et al., 2011). In the cognitive-behavioral model, safety behaviors often maintain fearfulness by increasing the perceived importance and likelihood of the threat (Blakey & Abramowitz, 2016; Helbig-Lang & Petermann, 2010). Individuals with high contamination fear perform more safety behaviors, which further increases contamination fear by enhancing the threat value. A contamination-fearful person might think, "I haven't gotten coronavirus because I have been paying close attention to the news, practicing social distancing, wearing a mask, and wiping down all my groceries. But the more I read about coronavirus, the scarier it seems. I must double my efforts and make sure I'm being even more careful." Many of these behaviors increase actual (not just perceived) safety in a high-threat pandemic, but they may also maintain high levels of contamination fear once the threat has passed.

Recent research has found generally high compliance with suggested COVID-19 precautionary measures. For example, participants surveyed in early April reported on average 87 % compliance with social distancing, 88 % compliance with thorough hand-washing procedures, and 75 % compliance with regular cleaning and disinfecting of surfaces (Park et al., 2020). In the same survey, however, only 57 % of individuals reported that they were afraid of becoming infected with COVID-19, and 24 % of individuals reported a fear of unintentionally infecting others. This suggests that at least some individuals reported high compliance with coronavirus-related safety behaviors without endorsing coronavirus anxiety. One implication of this finding is that there are likely factors (i.e., social desirability) other than fear of contamination that drive safety behavior usage. At the time of the survey, some coronavirus-related health behaviors were not yet formally recommended; for example, use of cloth face masks was not an official recommendation until April 3, 2020 (2020b, CDC, 2020a, 2020c). It may also be the case that early adoption of coronavirus-related safety behaviors, when virus-related outcomes were marked with more uncertainty, may have been driven by contamination fear. This view highlights the importance of not only if and how many safety behaviors are employed during a pandemic but also the time course of such behaviors.

While this study provides an important prospective examination of the role of contamination fear in responses to COVID-19, results must also be considered in light of several limitations. First, because baseline data were gathered as part of a screening process, a limited number of predictors could be assessed prospectively. Follow-up studies should prospectively examine additional individual difference factors, such as intolerance of uncertainty, as potential predictors of coronavirus-related anxiety and safety behaviors. Given the functional role of disgust in facilitating disease avoidance (Oaten et al., 2009), individual differences in disgust proneness will also be an important factor to consider when considering affective and behavioral responses during a pandemic.

Enrollment in the study also occurred over a period of time during which there were rapid changes in the risk of contracting COVID-19, and media coverage and public health recommendations also shifted dramatically; these changes likely affected participant attitudes and behavior. Although the date on which the survey was taken was controlled for in study analyses, a survey administered over a shorter window of time may provide a more stringent control. Additionally, examining changes in participant behavior using repeated measurement would also provide information regarding trajectories of behavior and attitude change in response to COVID-19. Finally, this study relies upon self-reported rather than direct observations of behavior, which may be subject to bias. Experience sampling may be one method by which safety behaviors, and any preceding or subsequent emotions and cognitions, could be more accurately surveyed within the context of participants' everyday lives.

Important methodological and psychometric limitations of the present study are also worth noting. In our survey, measures were not counter-balanced, and order effects may have affected our results. Data in the present study were gathered from a convenience sample of

undergraduates and were thus not a representative sample of the larger community. However, the college environment provides a unique opportunity to examine responses to COVID-19. College students may be uniquely susceptible to COVID-19 due to their close contact with a large number of individuals, especially those living in communal dorms. As students head back to college campuses for the Fall 2020 semester, universities are implementing strict guidelines to try to reduce the spread of COVID-19. Some safety behaviors, such as mask-wearing and frequent handwashing, have become more commonplace and are closely monitored by campus authorities. Other safety behaviors, such as seeking reassurance from friends, family, and medical professionals and looking up information online are likely to decrease, especially in individuals with lower levels of coronavirus anxiety, as COVID-19 becomes a less novel threat. Greater differences in both coronavirus anxiety and safety behaviors may emerge between individuals with high and low levels of contamination fear as the pandemic continues. Future research should examine the trajectories of coronavirus anxiety and related safety behaviors as the threat context shifts. Research along these lines may identify individuals that may ultimately benefit from psychological intervention.

Given that pre-pandemic contamination fear did not predict increased coronavirus anxiety but did predict increased obsessive-compulsive washing symptoms and other safety behaviors, clinicians evaluating individuals with contamination concerns should conduct a functional analysis to assess the role of various washing and cleaning behaviors in maintaining their fears. Many washing and cleaning behaviors are adaptive within the current context and may not contribute to increased anxiety, despite their similarity with obsessive-compulsive behaviors. Future research should examine coronavirus-related anxiety and safety behaviors within clinically anxious samples, as this may be an emerging theme for clinical intervention. Despite the limitations of the present study, these findings offer some insight into the emergence of anxiety and safety behavior usage during the COVID-19 pandemic. Continued clinical and community-based research will prove critical in identifying changes in anxiety and behavior that may be problematic throughout the COVID-19 pandemic and beyond.

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Declarations of Competing Interest

None.

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