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Journal of Anxiety Disorders 74 (2020) 102270

Contents lists available at ScienceDirect

Journal of Anxiety Disorders

journal homepage: www.elsevier.com/locate/janxdis

Conducting exposure and response prevention treatment for contamination fears during COVID-19: The behavioral immune system impact on clinician approaches to treatment

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ARTICLE INFO

Keywords:
COVID-19
Coronavirus
Contamination fear
Obsessive-Compulsive Disorder
Clinicians
Exposure with response prevention

ABSTRACT

The coronavirus disease 2019 (COVID-19) pandemic sparked significant anxiety regarding viral rates and means of transmission. Heightened concerns about contamination have prompted new hygienic strategies to vigilantly guard against infection, including hand washing immediately after touching foreign objects or suspected contaminants. This has presented a critical challenge for the delivery of exposure and response prevention (ERP) therapy to individuals with contamination fears due to Obsessive Compulsive Disorder (OCD), as providers must manage not only their clients' attitudes and reactions but their own as well. In this investigation, self-identified anxiety and OCD treatment specialists (N = 139) provided demographic information, including their anxiety and OCD caseloads, and completed measures related to intolerance of uncertainty (IUS-SF; Carlton et al., 2007), beliefs about exposure therapy (TBES; Deacon et al., 2013), and emotional reactions to physical sensations (The Chills; Maruskin et al., 2012). We tested the hypothesis that intolerance of uncertainty and activation of the behavioral immune system (BIS; Schaller & Park, 2011), a mechanism theoretically activated by the prominent emergence of pathogens to protect against illness would predict attitudes toward exposure. The Chills Scale was used to assess BIS activation, a broad assessment of vasoconstriction responses associated with different emotional reactions, and includes a subscale (coldness) that evaluates vasoconstriction associated with defense against pathogens. Both coldness and OCD caseload, but not anxiety caseload or subscales of intolerance of uncertainty, emerged as significant predictors of clinicians' beliefs about exposure; increases in OCD caseload were also related to decreases in negative beliefs about exposure. Findings are useful in determining methods for aiding clinicians in developing effective approaches to contamination fears during and post-pandemic that include addressing their own BIS-related concerns and mapping out means for social behavioral norms associated with engaging in exposure treatment.

1. Introduction

The COVID-19 pandemic has resulted in significant changes in social-behavioral norms to contain the spread of the virus. Varied behavioral changes have been mandated, such as maintaining a specified distance from others in public, wearing face coverings, and restricting the number of people that can gather in public places, both indoors and outdoors (described in the Centers for Disease Control and Prevention (2020a)). Additional behaviors to manage the spread resemble those practiced by sufferers from contamination fears associated with Obsessive-Compulsive Disorder (OCD), such as washing groceries (and their containers) with disinfectants and avoiding various surfaces and places (e.g., doorknobs, public restrooms) (Centers for Disease Control & Prevention, 2020b). Finally, specific guidelines for hand washing duration and thoroughness has been highly publicized, and includes counting to a specific number, with additional memory aids to ensure adequate cleanliness as well as video illustrations to demonstrate sufficient completion.

While clear hygiene strategies are essential to containing the spread of the virus and benefit public health, these also have consequences for individuals suffering from contamination fears due to OCD. There are also consequences for practitioners, who themselves are likely both engaged in these same recommended hygienic behaviors and simultaneously may recommend exposure with response prevention (ERP) strategies for OCD sufferers as a means to stem their symptoms. Research has consistently shown that exposure is most effective when

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https://doi.org/10.1016/j.janxdis.2020.102270
Received 22 June 2020; Received in revised form 30 June 2020; Accepted 30 June 2020
Available online 01 July 2020
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practiced in vivo with accompanying imagery (McKay et al., 2015). This is complicated in the case of COVID-19, and the aforementioned public health guidelines. For example, in exposure for contamination fears, a common exercise might include asking the sufferer to touch an object and then refrain from hand washing for some period of time. This immediately presents a problem in the context of containment strategies. It also may run counter to the very same behaviors that the clinician is practicing. Specifically, as clinicians deliver exposure with hesitation regarding its efficacy, the benefits to clients are reduced (Farrell, Deacon, Kemp, Dixon, & Sy, 2013).

One of the factors that would be expected to limit the ability of clinicians to deliver exposure therapy for contamination fears would be their own hesitancy around contamination due to COVID-19. The behavioral immune system (BIS; Schaller & Park, 2011) is a useful theoretical framework to explain potential hesitancies in clinicians in delivering treatment for contamination fears. Briefly, the BIS is an evolved protective response that activates increased interoceptive awareness for potential infections. In addition to increased anxiety, there is also increased disgust sensitivity, as a further means of protecting from contaminants. Recent research has shown that there is a specific moderating role for disgust in the relationship between anxious interoceptive awareness and fear of contracting COVID-19 (McKay, Yang, Elhai, & Asmundson, 2020). Further, recent research shows a specific disgust-relevant BIS-based reaction associated with contamination fears that is a result of concerns with pathogens penetrating the skin (Mancusi & McKay, 2020).

One potential indicator of BIS activation would be a constellation of physical manifestations of emotional reactions, dubbed *the chills*. In the most general way, the chills refers to a range of reactions to stimuli and events, such as feelings of awe or wonder (Kupfer & Fessler, 2018; Maruskin, Thrash, & Elliot, 2012). However, there is also evidence that components of the chills may signal a warning of potential pathogens penetrating the skin (discussed in Blake, Yih, Zhao, Sung, & Harmon-Jones, 2016). In establishing an assessment of chills, a four-factor measure was developed, assessing shivers, coldness, tingling, and goosebumps (Maruskin et al., 2012). Two of these, coldness and shivers, are more associated with negative affectivity; coldness is particularly associated with efforts at thermoregulation (Maruskin et al., 2012) and tactile sensations of disgust (Saluja & Stevenson, 2019).

Hesitancy in delivering exposure treatment for contamination fears could be compounded by other anxiety concerns of practitioners. Past research has shown that some clinicians are apprehensive about conducting exposure, endorsing fears of harming clients (Deacon, Lickel, Farrell, Kemp, & Hipol, 2013), potential for vicarious traumatization to the therapist as well as being unacceptably aversive to clients (Zoellner et al., 2011), and increased malpractice risk (Richard & Gloster, 2006). Given that clinicians are embedded in the cultures in which they practice, and that wider social events significantly influence methods of practice, it can be anticipated that clinician-specific reactions to the COVID-19 pandemic would have consequences for their concerns around delivering exposure treatment.

This study aimed to test the hypothesis that BIS activation, as measured by the subscales of the chills, in conjunction with intolerance of uncertainty, would predict therapists' beliefs about the potential risk of exposure therapy. Specifically, as intolerance of uncertainty and the chills increased, so too would therapists' beliefs that exposure poses a threat to the well-being of clients, particularly in relation to interventions for contamination fears.

2. Methods

2.1. Participants

Sampling of participants took place with three separate postings during the height of the quarantine period in the United States, on March 24, April 6, and April 30, 2020. Solicitations for survey completion were posted to a closed Facebook group for clinicians who specialize in the treatment of OCD, Anxiety Disorders, and Body Focused Repetitive Behaviors. The final sample of clinician respondents was N = 139. The mean age was 44.81 years (SD = 11.77, range 27–74 years). The mean years practicing was 13.63 (SD = 10.3, range 1–50 years). The estimated percentage caseload of individuals with OCD was 36.26 (SD = 31.8; range 0–96), and estimated percentage caseload of individuals with anxiety disorders was 62.92 (SD = 27.76; range 0–100). There were N = 116 females and N = 23 males. The ethnic breakdown was primarily Caucasian (N = 125, 89.9 %), with the remainder Latinx (N = 4; 2.8 %), Asian (N = 4; 2.8 %), African-American (N = 1; 0.1 %) and N = 5 (3.5 %) did not indicate. N = 87 (62.6 %) were doctoral level, and the remainder (N = 52, 37.4 %) were MA level practitioners.

Participants were further surveyed about COVID-19 specific demographic features. Specifically, clinicians were asked whether they had contracted COVID-19 (n = 1 who had) or knew anyone who had contracted the illness (n = 39 who did) and knew anyone who had passed away from the illness (n = 1 who did). Clinicians were also asked how many people they knew who contracted the virus, and the mean was 2.5 (SD = 3.06; range from 0 to 20). Clinicians were further asked if they lived with someone who had contracted the illness (n = 12 who had), lived with someone who had a compromised immune system (n = 10 who did), or had a compromised immune system (n = 12 who reported they did).

2.2. Measures

2.2.1. Intolerance of uncertainty scale-short form (IUS-SF; Carlton, Norton, & Asmundson, 2007)

The IUS-SF is a 12-item scale that measures reactions related to intolerance of uncertainty (i.e., the tendency to react negatively to uncertain or ambiguous situations or events). It is comprised of two factors: anxiety and avoidance, due to intolerance of uncertainty. In the original scale development research, it was found to have satisfactory convergent validity with assessments of anxiety and worry, as well as depression. The two subscales were identified in confirmatory factor analysis and high internal consistency reliability ($\alpha > 0.9$). The factor structure and internal consistency has been replicated in a sample of individuals with OCD (Jacoby, Fabricant, Leonard, Riemann, & Abramowitz, 2013).

2.2.2. The chills scale (CHILLS; Maruskin et al., 2012)

The CHILLS is a psychometrically sound 12-item measure that assesses physical sensations associated with variations of interoceptive disgust-related experiences. These disgust experiences are assessed based on tactile manifestations, and is comprised of four subscales: goosebumps, tingling, coldness, and shivers. Each subscale of the CHILLS assesses cold-defense reactions to external situations. Goosebumps and tingling are considered positive physiological experiences, such as inspiration or awe. On the other hand, coldness and shivers are associated with negative experiences, such as looming danger (shivers) or risk of pathogen infection (coldness). The measure was developed in a series of five studies that aimed to establish the association with associated self-report qualities and behavioral indicators. The subscales were established through cluster, principal components, and confirmatory factor analyses.

2.2.3. Therapist beliefs about exposure scale (TBES; Deacon et al., 2013)

The TBES is a psychometrically sound 21-item measure designed to assess negative attitudes regarding exposure therapy in practitioners. It is a single factor scale. The scale was developed by sampling clinicians who routinely treat individuals with anxiety disorders given the high relevance of exposure to treating that class of diagnoses. The original scale development showed a single score through principal components analysis. The measure has excellent internal consistency ($\alpha = 0.95$).

Table 1
Correlation among study variables.

	1	2	3	4	5	6	7
1. TBES	*0.95*						
2. Goose	−0.07	*0.87*					
3. Tingle	0.06	**0.65**	*0.84*				
4. Coldness	0.10	**0.51**	**0.53**	*0.83*			
5. Shivers	−0.05	**0.61**	**0.68**	**0.51**	*0.88*		
6. IUS-Anx	0.14	**0.25**	**0.24**	**0.31**	**0.25**	*0.79*	
7. IUS-Av	0.08	**0.26**	0.19	**0.34**	0.23	**0.77**	*0.75*
Mean	41.44	9.52	9.78	7.34	9.58	14.96	9.60
SD	15.08	5.19	5.95	5.29	5.66	4.02	3.24
Range	21-86	3-25	1-23	1-24	2-26	8-25	5-20

Note: Values on the diagonal are the obtained α for each scale in this study. TBES = Therapist Beliefs About Exposure Scale; Goose = Goosebumps; Tingle = Tingling; IUS-Anx = Intolerance of Uncertainty Scale-Short Form, Anxiety Subscale; IUS-Av = Intolerance of Uncertainty Scale, Avoidance Subscale.
Correlations > 0.24 are $p < .01$ and listed in **bold**; correlations between 0.17 and 0.23 are $p < .05$ and are listed in underline.

2.3. Data analysis

Age and gender were controlled in regression analyses. To test the hypothesis, the subscales of the CHILLS and the IUS-SF were entered as predictors, in addition to the clinician's estimated percentage of OCD cases in caseload, and the TBES was the criterion variable. Tests of multivariate normality using Cook's and Mahalanobis distances showed that the assumption was met. There was no multicollinearity. Further, comparisons between the groups on the COVID-19 specific demographic variables were conducted to examine differences on the study variables. No significant differences were found except for whether the clinician knew someone with COVID-19 for the coldness subscale of the CHILLS scale. None of the study variables were correlated with the number of individuals the clinician knew who contracted COVID-19. Thus, standard multiple regression analyses were conducted to test the hypothesis.

3. Results

Table 1 displays the correlation matrix and descriptive information on the sample and the measures used in the primary analyses for this study. Using prior benchmarks, no variables were significantly skewed or kurtotic.

Multiple regression analyses were conducted, with age and gender controlled. The primary model with the coldness subscale of the CHILLS, percentage of OCD cases, and the Anxiety subscale of the IUS-SF was significant in predicting the TBES ($F(5,127) = 21.35$, $p < .001$, with Adjusted $R^2_{change} = 0.43$). In this model, only the percentage of OCD cases ($\beta = -.47$, $p < .001$) and coldness ($\beta = 0.19$, $p < .01$) were significant.

Similarly, the model with coldness, percentage of OCD cases, and the Avoidance subscale of the IUS-SF was significant in predicting the TBES ($F(5,127) = 21.24$, $p < .001$, with Adjusted $R^2_{change} = 0.43$). Again, the percentage of OCD cases ($\beta = -.-47$, $p < .001$) and coldness ($\beta = 0.18$, $p < .01$) were significant predictors.

The same models were run for each additional subscale of the CHILLS (goosebumps, tingling, and shivers) with no significant predictors. These same models were also run with the percentage of the anxiety caseload; in each case, only the coldness subscale was a significant predictor of TBES.

4. Discussion

The COVID-19 pandemic has resulted in significant disruptions in daily life. Public health officials have repeatedly emphasized changes in hygiene behaviors to control the spread of the virus. Many of these behaviors resemble those routinely conducted by individuals suffering from contamination-based OCD. Treatment providers, who are members of the social milieu whereby these same containment strategies have been emphasized, must therefore attempt to balance their own concerns over infection with public health recommendations in providing behavioral interventions, such as exposure with response prevention, for contamination fears.

The BIS (Schaller & Park, 2011) is a protective mechanism activated to avoid infections. The findings from this study suggest that BIS activation has implications for negative attitudes about implementing exposure among clinicians. Those clinicians with heightened physiological reactions were most likely to report negative attitudes towards exposure. This has important implications for the delivery of ERP. Prior research has shown that as negative attitudes about exposure increase, treatment is delivered with greater caution, leading to sub-optimal intervention (Farrell et al., 2013). A result of this pandemic could require developing trainings aimed at assisting clinicians with overcoming their own COVID-19 apprehensions in order that optimal ERP can be delivered to individuals with contamination-based OCD. This study addressed this question in a highly suitable sample, namely a self-identified group of practitioners who specialize in anxiety disorders and OCD.

An encouraging note on the findings is that as the percentage of OCD caseload increased, the negative views on exposure decreased in the models tested. This was not found for overall anxiety disorder caseload. This suggests that as practitioners engage in specific OCD-relevant treatment, the ability to continue to view exposure through a favorable lens may not be influenced by individual characteristics, such as activation of the BIS. As recently discussed (Storch et al., 2020), the conduct of exposure in the COVID era, both during and following the pandemic, requires balancing the nature and severity of the symptoms with the social-behavioral norms. Accordingly, during the COVID pandemic, a new set of normative hygiene behaviors have emerged that warrant modeling as clinicians address contamination fears in their clients. However, in training clinicians, it will be necessary to address specific personal clinician concerns over infection risks as they develop treatment plans for contamination fears.

5. Conclusions

In this study, we investigated the attitudes of mental health practitioners around exposure treatment during the COVID-19 pandemic, a time marked by uncertainty and heightened concern about pathogen transmission. We tested the hypothesis that providers' attitudes and reactions would be related to their beliefs about exposure therapy (i.e., that BIS activation would be associated with negative attitudes toward delivery of exposure). Although previous studies have also explored clinicians' attitudes to exposure, this constitutes the first investigation (to the authors' knowledge) into the relationship between BIS activation and delivery of exposure during the COVID-19 pandemic. After analyzing the data from a final sample of 139 participants, our statistical analysis indicated that providers' OCD (but not anxiety) caseload and a proposed indicator of BIS activation (coldness) significantly predicted their beliefs about exposure. In subsequent waves of the study, we will continue to investigate the role of the BIS and pandemic stress in attitudes and actual delivery of exposure for OCD-related contamination fears.

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