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Cyberchondria: Parsing health anxiety from online behavior

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Abstract

Objective—Individuals with questions about their health often turn to the internet for information about their symptoms, but the degree to which health anxiety is related to online checking, and clinical variables, remains unclear. The clinical profiles of highly anxious internet checkers, and the relationship to checking behavior itself, have not previously been reported. In this paper, we test the hypothesis, derived from cognitive-behavioral models, that individuals with higher levels of illness anxiety would recall having experienced worsening anxiety after reassurance-seeking on the internet.

Method—Data from 731 volunteers who endorsed engaging in online symptom searching were collected using an online questionnaire. Severity of health anxiety was assessed with the Whiteley Index, functional impairment with the Sheehan Disability Scale, and distress recall during and after searching with a modified version of the Clinician's Global Impairment scale. Multiple regression analyses were conducted to determine variables contributing to distress during and after internet checking.

Results—Severity of illness anxiety on the Whiteley Index was the strongest predictor of increase in anxiety associated with, and consequent to, online symptom searching. Individuals with high illness anxiety recalled feeling worse after online symptom checking while those with low illness anxiety recalled relief. Longer duration online health-related use was associated with increased functional impairment, less education, and increased anxiety during and after checking.

Conclusion—Because individuals with moderate-high levels of illness anxiety recall experiencing more anxiety during and after searching, such searching may be detrimental to their health. If replicated in controlled experimental settings, this would suggest that individuals with illness anxiety should be advised to avoid using the internet for illness-related information.

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Keywords

Cyberchondria; health anxiety; hypochondriasis; illness anxiety; internet symptom-searching; functional impairment

Cyberchondria is a term used to refer to searching the web excessively for health care information⁽¹⁾. More recently it was defined as a pattern of excessive and repetitive internet-symptom-checking behavior and purported to be related to underlying health anxiety and non-reassurability⁽²⁾; this is a concept not yet investigated in an internet population. A recent follow-up perspective⁽³⁾ highlighted the need to parse the relationship of health anxiety from that of online symptom-checking behavior. This is a concerning subject given that approximately 89% of American⁽⁴⁾ ⁽⁵⁾ ⁽⁶⁾ and 75% of international web-users⁽²⁾ search for health information online.

Health anxiety is a term for mild-severe presentations of illness worries, reported among 19.8% of patients attending British specialty clinics⁽⁷⁾, and 3.4% of Australians in a large community survey⁽⁸⁾. About 4-6% of patients in American primary care samples⁽⁹⁾ ⁽¹⁰⁾ exhibit pathological levels of illness worry of sufficient severity to meet criteria for the DSM-IV diagnosis of Hypochondriasis⁽¹¹⁾. Although hypochondriasis itself as a diagnosis was removed from DSM-5⁽¹²⁾, health anxiety now forms a central feature of both Illness Anxiety Disorder and Somatic Symptom Disorder.

Concern about illness—regardless of actual presence of illness—has been found to predict increased ratings of disability, help-seeking behavior, and number of somatic symptoms reported⁽¹³⁾. Health worry is also associated with attentional bias to illness-related stimuli in both clinically hypochondriacal populations⁽¹⁴⁾ and in non-clinical populations with baseline somatic preoccupations⁽¹⁵⁾, even after controlling for state anxiety.

Additionally, the internet as an informational medium may exert unique affective pressure on those with health anxiety. Information from the web is often of unregulated accuracy⁽¹⁶⁾ where benign symptom inquiry into a search engine is likely to return a disproportionately high rate of statistically unlikely explanations, such as a life-threatening illness⁽⁶⁾. In general, users are unlikely to be skeptical about the quality of information obtained⁽¹⁷⁾ or attend to base rates of illnesses⁽¹⁸⁾. Those with worries about illnesses are even less likely to attend to source validity⁽¹⁹⁾ and are more frightened of what they see ⁽²⁰⁾. Further, moderate levels of anxiety and increased checking within non-clinical samples have been found to be related to increased number of medical appointments⁽²¹⁾, increased likelihood of feeling “frightened” of health-related online information⁽²⁰⁾, and worsening of health anxiety⁽²²⁾.

Excessive checking behavior is also related to health anxiety. One study, with a large number of participants, reported illness concern was “escalated” over time during internet health searches⁽⁶⁾; however, this internet study did not use psychometrically validated clinical instruments making it unclear how to evaluate the severity of illness anxiety or change in anxiety with internet usage and making it challenging to compare to other published studies. Other data suggests “pathological internet use” is associated with increased reassurance-seeking behavior⁽²³⁾. As reassurance-seeking in OCD increases distress rather than reduces

it^(24, 25), cognitive behavioral models now posit that reassurance-seeking is a maintaining factor in health anxiety^(7, 26); based on these models, we hypothesized that high levels of illness anxiety would predict a recall of worsened anxiety during and after internet-symptom-checking.

Research related to these lines of inquiry have been somewhat limited by the use of a primarily college-aged sample—a research approach the scientific community has more recently questioned⁽²⁷⁾—and by the use of a healthy rather than a more severely ill sample of individuals with illness anxiety. Despite the many negative emotional and behavioral consequences associated with clinically-severe levels of illness anxiety and the widespread use of the internet, there is a dearth of information about the impact of the internet upon these individuals. The present study was conducted to begin to address this gap in the literature, using an internet-population.

Methods

This survey, entitled “Cyberchondria: a survey for people who check symptoms online,” was posted online from 2008-2012. This 19-item survey was developed by the authors and approved by the Institutional Review Board of the New York State Psychiatric Institute.

Aims—We hypothesized that higher illness anxiety measured continuously with the Whiteley Index (WI), would predict a recall of increased anxiety both during and after internet symptom checking. Similarly, when the WI was assessed dichotomously, we predicted that individuals with high illness anxiety would recall greater anxiety during and after internet checking than those with low levels of illness anxiety. Our null hypothesis was that illness anxiety would not be associated with a recall of worsening anxiety at either time point. Our secondary hypothesis was that high illness anxiety among internet health information seekers would be associated with greater functional impairment. Finally, an additional aim of this study was to characterize the participants who reported high vs low levels of illness anxiety and long-duration vs short-duration checking, based on age, gender, years of education, presence of a medical disorder, advanced degree in health education, frequency of checking, and functional disability.

Participants—Participants were self-selected and received no compensation for completing the survey so as to minimize selection bias and secondary gain. To recruit individuals with higher levels of illness anxiety, an invitation to participate in the study was posted on our Columbia Illness Anxiety informational website. To enroll healthier individuals, we recruited community and student volunteers. The community volunteers were targeted through advertisements on a volunteer-job recruitment website (“Craigslis”) covering six major U.S. cities. Student volunteers were recruited through a one-time submission on an email list-serve for psychology graduate students. A one-time post was put on each website/email list-serve for community and student volunteers. The post on the Illness Anxiety website remained on the home page for an extended interval, thus ensuring that the study sample also included a substantial number of individuals with higher levels of illness anxiety and concerns. At the request of the institutional review board, no Internet

Protocol (IP) data pertaining to source direction or location data- nor specific referral source information- was collected to ensure anonymity.

Measures

Severity of hypochondriasis was assessed using The Whiteley Index (WI), a reliable and valid 14-item self-report questionnaire measuring hypochondriacal attitudes and behaviors on a 5-point Likert scale^(28, 29). The mean Whiteley score for our sample was 50.4 ($SD = 13.2$). We identified a cut-off on the WI of 30 or below as “low” illness anxiety. This cut-off was chosen as it represents a score at least 2 standard deviations below the group mean (49.4, $SD = 9.6$) of a research sample of 195 patients in our recent clinical trial meeting DSM-IV criteria for hypochondriasis (www.clinicaltrials.gov). Scores above 30 on the WI would be consistent with moderate-high illness anxiety, hereon abbreviated in this paper as “high” illness anxiety. To test our hypotheses, we analyzed this criterion set of illness anxiety (WI scores) as both a continuous and dichotomized independent variable (i.e., Whiteley High (WH) vs. Whiteley Low (WL) groups). Self-report of distress was rated using a 7-point Likert clinical change scale (30) used in numerous clinical trials and shown to have good reliability with the clinician-rated Clinical Global Improvement (CGI) scale (31, 32) recalled for two points in time. Functional impairment was assessed using the Sheehan Disability Scale (SDS), a reliable and valid self-report measure assessing impairment on three domains (work, social, family), each using a 10-point visual analogue scale; higher scores indicate greater impairment (33, 34).

Analyses

All analyses were conducted using SPSS 17.0. Cases missing more than half of WI items were excluded from the regression analyses ($n=11$). Multiple regression was used to examine relationships between selected predictor variables and change of anxiety before and after checking, as well as with functional impairment, with all variables entered simultaneously. When testing our hypotheses, we included age, gender, ethnicity (dummy coded into White and non-White dichotomous groups), years of education, medical stability (based on patient report of physician assessment), duration of checking (i.e., “most time” spent checking on a day in the past month), and severity of health anxiety (WI). For regression models we analyzed the respondents' data both continuously and categorically, using a binary high vs. low WI grouped based on the previously defined cutoff values. For analyses of long vs. short-duration internet users, survey respondents were dichotomized into those who symptom-search less than 1 hour/day on the worst day of the prior month, vs. those who check for greater than 3 hours/day on the worst day, representing the upper and lower quartiles of participant spread.

Results

Characterization of the Sample—Seven hundred thirty-one volunteers completed the clinical survey online, of whom 720 provided sufficient information to be included in the analyses. The mean age of respondents was 33.01 years ($SD = 12.08$); 65.6% were female. The sample identified primarily as White (78.7%), and 82.4% reported living in the U.S. The mean education level was some college ($M = 15.48$ years, $SD = 2.69$). Of the sample, 80.8%

reported having health insurance; 14.1% reported having received some formal health education.

Although our study sample represents a wide range of health anxiety levels, the majority of respondents reported high levels of illness anxiety on the Whiteley Index. For the 720 participants, WI sum scores ranged from 14 to 70 points, out of 70 possible points ($M = 50.37$; $SD = 13.15$); the mean illness anxiety score for this internet-based sample is comparable to that found in a clinical research sample of 195 individuals with DSM-IV hypochondriasis who participated in our NIH-funded treatment trial ($M = 49.5$; $SD = 9.7$) (www.clinicaltrials.gov). Using the previously specified criteria, eight times as many survey participants met the criteria for high illness anxiety (WH; 88.9%, $n = 640$) vs. low illness anxiety (WL; 11.1%, $n = 80$). During the worst day of checking of the prior month, 25.7% reported having spent less than 1 hour checking health information online, 43.0% spent 1-3 hours, 19.4% spent 3-5 hours, and 11.8% spent more than 5 hours. While more than two-thirds (68.7%) reported having had their current symptoms checked by a physician, almost one-third (27.9%) reported they avoid going for a medical evaluation due to fear of what the doctor might find. Among those who did get evaluated by a physician, 71.1% reported they were told they worried excessively; of these, 50.2% denied any discernible medical problem, whereas 20.9% reported a stable medical condition. Twenty-five percent said the doctor was uncertain as to whether a medical illness was the cause of the problem; 3.9% were told they had an unstable medical problem.

Regression Analyses

Anxiety worsening (CGI)

During online symptom-checking: The overall model was statistically significant, indicating the predictor variables collectively predicted anxiety during checking (continuous: $R^2 = .14$, $F(7, 618) = 14.24$, $p < .01$; dichotomous: $R^2 = .08$, $F(6, 618) = 7.33$, $p < .01$) on the CGI scale. Continuous WI scores were a significant predictor of anxiety during online checking (see Table 1). Higher WI scores predicted increased anxiety during checking as hypothesized ($\beta = .34$, $p < .01$). When considered dichotomously, WI again significantly predicted anxiety during online checking ($\beta = .19$, $p < .01$). Of the control variables, age was a significant negative predictor of anxiety during checking for both the continuous and dichotomous regression models, meaning older participants were less likely to experience worsening anxiety during checking than younger participants. In the continuous regression model, being medically stable was negatively associated with worsening anxiety after symptom-checking. In the dichotomous regression model, the duration of time spent checking on a day in the last month was a significant predictor of worsening during internet-symptom-checking.

After online symptom-checking: The predictor variables collectively predicted anxiety after checking (continuous: $R^2 = .21$, $F(7, 618) = 23.40$, $p < .01$; dichotomous: $R^2 = .13$, $F(7, 618) = 13.10$, $p < .01$). Continuous WI scores were a significant predictor of anxiety after online checking (see Table 1), where higher WI scores predicted increased anxiety after checking ($\beta = .41$, $p < .01$). When considered dichotomously, WI again significantly predicted anxiety after checking ($\beta = .26$, $p < .01$). Of the control variables, age was again a

significant negative predictor of anxiety after checking in both the continuous and dichotomous regression models. Duration of most hours spent checking on a day in the last month was also a significant predictor of anxiety after checking for both models. Lastly, for the continuous model only, being medically stable was negatively associated with worsening anxiety after checking.

Functional impairment (SDS)—The predictor variables collectively predicted functional impairment on the SDS (continuous: $R^2 = .27$, $F(7, 356) = 18.80$, $p < .01$; dichotomous: $R^2 = .15$, $F(7, 356) = 9.08$, $p < .01$). Continuous WI scores were a significant predictor of increased functional impairment (see Table 1), with higher WI scores associated with increased functional impairment in the continuous model ($\beta = .41$, $p < .01$) and the dichotomous model ($\beta = .17$, $p < .01$). Of the clinical variables, duration of most hours spent checking on a day in the last month, and presence of uncertain or unstable medical diagnosis were both also associated with functional impairment on the SDS in both models.

Sample Characteristics

WH vs. WL: Illness severity characteristics—Compared to WL participants (30 or lower on the WI), WH participants were more likely to be male, but were similar in age, ethnicity, and endorsement of having health insurance (see Table 2). When similarly compared, WH participants reported less education (WH: $M = 15.37$, $SD = 2.76$ vs. WL: $M = 16.33$, $SD = 1.97$, $d = .36$) and worried about more diseases (WH: $M = 4.92$, $SD = 3.66$ vs. WL: $M = 1.83$, $SD = 1.82$; $d = .88$). The WH group also reported significantly more functional impairment than the WL group on the SDS (WH: $M = 17.99$, $SD = 7.58$; WL: $M = 7.92$, $SD = 6.10$; $d = 1.34$). Similarly, within each of the three subdomains on the SDS, WH participants were more likely to report scores indicating clinical elevation (above 5 points) as compared to WL participants: Work $d = 1.07$; Social $d = 1.29$; Family $d = .93$. WH participants also reported checking their symptoms for more hours on the worst day in the last month ($d = 1.10$), and with greater frequency ($d = 1.21$) as compared to WL participants (Table 2).

WH participants also recalled increased anxiety *during* online reassurance-seeking ($M = 5.01$, $SD = 1.67$; as compared to WL participants: $M = 3.78$, $SD = 1.64$; Cohen's $d = .74$), as well as *after* ceasing reassurance-seeking ($M = 5.02$, $SD = 1.64$ as compared to WL participants: $M = 3.49$, $SD = 1.61$; Cohen's $d = .96$). When these items were dichotomized to characterize “worsening” of anxiety, indicated by a score of “slightly-” to “significantly more anxiety” (i.e., a 5, 6, or 7 on the CGI during and after items), 68.3% of WH participants (vs. 40.0% of WL) reported worsening *during* checking ($r\phi = .18$), and 67.2% of WH (vs. 28.8% of WL) reported worsening *after* checking ($r\phi = .23$). Interestingly, more WH participants reported medical stability (as diagnosed by a physician) as compared to WL participants (72.5% vs. 56.9%; $r\phi = .10$), whereas more WL participants endorsed having received some health education (21.8% vs. 13.2% of WH participants; $r\phi = .08$). (Table 2).

Long (>3 hours) versus Short (<1 hour) duration characteristics—As both continuous and dichotomous regression models (Table 1) indicated the duration of internet checking behavior on a day in the last month was a significant predictor of most outcomes,

we calculated the lower and upper quartile of internet checking use on the worst day in the past month with “>3 hours” as “long” use, and “<1 hour” as “short” duration use (see Table 3). Compared to long-duration internet users, short-duration users were similar in age, ethnicity, health insurance, and medical stability.

Long-duration internet users were significantly more functionally impaired on the “family” domain of the SDS as compared to the short-duration internet use group ($d = .72$). There was a similar trend of increased impairment across the other domains, though these did not reach statistical significance (SDS total $d = .80$; SDS work $d = .65$; SDS social $d = .70$; SDS family $d = .72$). Long-duration internet users reported less education ($d = .28$), were more likely to be male ($r_{\phi} = .34$), reported less formal training in health education ($d = .11$), and reported more frequent checking on the worst day in the past year ($d = 1.67$). Long-duration internet users reported their degree of hypochondriacal fears, as indicated by WI scores ($d = 1.30$) and number of diseases feared ($d = .53$), were far greater than that of the short-duration internet users.

Consistent with our hypothesis, those with long-duration checking were more likely to feel worse during ($d = .45$) and after checking ($d = .66$) than those with short-duration checking. Approximately 72.1% of long-duration internet users reporting worsening during checking (versus 51.89% of short-duration internet users; $r_{\phi} = .21$), and 71.7% of long-duration internet users reporting worse anxiety after symptom-checking (vs. 46.0% of short-duration internet users; $r_{\phi} = .26$). (Table 3).

Discussion

The current inquiry examined the experiential correlates of online symptom searching using validated clinical measures and data from a large, self-selected, anonymous internet population sample who endorse checking their physical symptoms online for reassurance. Our primary hypothesis— that individuals with higher levels of illness anxiety would be more likely to recall higher distress *during* and *after* online checking— was supported. Internet-using individuals with higher levels of illness anxiety also reported fearing more diseases and having greater functional impairment, but paradoxically these individuals also reported being less likely to have a medically confirmed unstable physical illness. Correspondingly, longer duration internet use was related to increased functional impairment and a recall of increased anxiety both during and after on-line symptom checking. These results may enhance a clinician's work with hypochondriacal patients given that these patients turn to the internet in the hope that checking will reduce their anxiety. The clinician's recommendation to the patient to avoid internet checking may be more persuasive with the data in hand from this study indicating that checking online for reassurance by an individual with high levels of illness anxiety does more harm than good. While our study is clearly not proof of this phenomenon, it is highly suggestive and consistent with the cognitive-behavioral models that theorize that reassurance-seeking maintains health anxiety.

Interestingly, the WH group demonstrated higher medical stability, but lower medical education as compared to the WL group, perhaps indicative of a tendency to seek reassurance of stability without critically appraising source data, leading to a sense of being

overwhelmed and disempowered by the information they find. Similarly, long-duration internet users were less likely to have health education as compared to short-duration users; thus, internet symptom-checking may indicate a thirst for knowledge about symptoms- one with harmful consequences if conducted with a fearful mindset and without a time limit.

Those who showed resilience were individuals with low levels of illness anxiety who, although they did not differ in terms of distress change *during* checking, reported feeling relieved after internet-symptom-checking. This highlights the importance of identifying the mechanisms that enable low health anxiety individuals (WL) to make productive use of the internet- such as better tolerance for, or ability to mitigate, the discomfort of searching- as there is limited prior research in this regard (21).

This study adds to prior work in several ways. First, participants were recruited directly from the internet and drawn from multiple sources, whereas prior research has largely focused solely on university students. Second, our sample size ($n = 731$) was substantially larger than those of prior studies of internet-related health anxiety (20) (21) (22). Third, although our sample was not derived from a clinical setting, the mean Whitely Index score in our internet-based sample represents moderate to severe levels of health anxiety, comparable to levels associated with the clinical diagnosis of hypochondriasis, whereas in earlier studies the majority of individuals had only mild or sub-clinical levels of illness-related worry. Fourth, our study included a standardized measure of functional status to assess the association between illness anxiety, health-related internet usage, and functional impairment. Fifth, our survey inquired about the respondents' underlying medical status as assessed by a physician, while past research had not included this variable.

While our sample should not be considered unbiased, our findings provide an initial characterization of individuals experiencing a cyberchondria-related pattern of checking, where severity of illness anxiety on the WI was the best predictor of variance; a small effect, but likely a reliable one considering our large sample size. Likewise, the strongest effect was noted *after* checking as compared to findings related to recall *during* reassurance-seeking. This may be related to “non-reassurability”(2), or may be a product of the recency effect.

Although there were a greater proportion of females in this internet sample than males, we think it highly unlikely that this had a significant impact on our primary hypothesis testing; in the regression analysis, gender was not a significant predictor of increased anxiety before or during internet use. Rather, the greater proportion of females in our internet study sample is consistent with prior research with college-age students suggesting that females are more likely to seek health information on-line than males(35).

While the results of our large sample-size study highlight a potentially problematic aspect of health information checking, the study design has inherent limitations. Most relevant is the problem of recall bias as, although self-reports may at times be better in estimating behavioral outcomes (36), those who are currently anxious may be more likely to have a negatively-colored memory of prior health-related internet checking. To avoid variables impacting historical recall, a controlled experimental design or measuring with real-time data collection strategies, (e.g., ecological monitoring with text messaging reminders to self-

rate at random intervals(37)) would the logical next step. To address generalizability and possible selection bias, future *in vivo* and internet-based studies should clarify the referral source and delineate clinical and non-clinical samples, a question that was not asked in our study. Future studies would also benefit from assessment of comorbid psychopathology—possibly accounting for additional variance in distress and functional disability scores—as a means to further parse factors exacerbating a cyberchondria-pattern of checking.

In addition, the combination of human and computer inattention to base rates of serious illnesses during internet-symptom-checking may create a uniquely dangerous environment for those predisposed to worry about their health. Future search engines should incorporate ranking algorithms in medical domains⁽³⁸⁾, iterative intelligent medical search engines⁽³⁹⁾, and classifiers to indicate when a user is utilizing a search engine as a probabilistic diagnostic system⁽⁶⁾, such that accurate base rates of illness are more accessible to internet-symptoms-searchers. On the human side, those with illness worries may consider installation of blocking-software to prevent anxiety-provoking health searches, as such an approach has been effective for other kinds of pathological checking⁽⁴⁰⁻⁴⁴⁾. Similarly, increasing health literacy⁽⁴⁵⁾ may help to reduce internet-related escalations of distress among those with illness anxiety, as such a strategy may enable individuals to discriminate better between trustworthy vs. untrustworthy information sources⁽²⁰⁾. Future studies of the impact of the internet on education as we included in this survey may also measure health literacy and treatment-seeking behavior⁽⁴⁶⁾ as these are critical variables impacting outcome.

While these findings warrant replication, avoiding internet-symptom-searching and long-duration searches appears critical for patients with moderate-severe health anxiety. Overall, the vast resource of medical information available on the internet seems problematic for individuals with high illness anxiety—a hidden affective price for using a cost-effective informational source.

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Table 1
Regression Analysis Results of Influence of Key Variables on Change in Anxiety and on Functional Impairment^a

Anxiety During Online Symptom-Checking (CGI)				
Model		Predictor Variables	β	sr^2
Continuous	$R^2 = .14^*$	WI scores *	.34	.09
		Age *	-.09	.01
		Gender	-.05	.00
		Ethnicity	.06	.00
		Years of Education	.04	.00
		Medically Stable *	-.08	.01
		# hrs/day/month	.03	.00
Dichotomous	$R^2 = .08^*$	WH vs. WL *	.19	.03
		Age *	-.10	.01
		Gender	-.04	.00
		Ethnicity	.07	.00
		Years of Education	.04	.00
		Medically Stable	-.06	.00
		# hrs/day/month *	.11	.01
Anxiety After Online Symptom-Checking (CGI)				
Model		Predictor Variables	β	sr^2
Continuous	$R^2 = .21^*$	WI scores *	.41	.14
		Age *	-.08	.01
		Gender	.02	.00
		Ethnicity	.03	.00
		Years of Education	.05	.00
		Medically Stable *	-.10	.01
		# hrs/day/month *	.10	.01
Dichotomous	$R^2 = .13^*$	WH vs. WL *	.26	.06
		Age *	-.85	.01
		Gender	.02	.00
		Ethnicity	.03	.00
		Years of Education	.05	.00
		Medically Stable	-.07	.00
		# hrs/day/month *	.18	.03
Functional Impairment (SDS)				
Model		Predictor Variables	β	sr^2
Continuous	$R^2 = .27^*$	WI scores *	.41	.15
		Age	.04	.00

		Gender	-.06	.00
		Ethnicity	.03	.00
		Years of Education	-.05	.00
		Medically Stable *	-.12	.01
		# hrs/day/month *	.18	.03
Dichotomous	$R^2 = .15^*$	WH vs. WL *	.17	.03
		Age	.04	.00
		Gender	-.09	.00
		Ethnicity	.06	.00
		Years of Education	-.06	.00
		Medically Stable *	-.10	.01
		# hrs/day/month *	.27	.07

Note:

* $p < .05$

^aWI= Whiteley Index; WH= above 30 points on the WI; WL= 30 or below points on the WI; “# hrs/day/month”= Total number of hours spent checking physical symptoms online on the “worst day in the past month”; SDS = Sheehan Disability Scale; CGI = Clinicians Global Impressions-Improvement scale; Regressions including WI $df = 618$, Regressions including SDS $df = 356$).

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Table 2
Descriptors of Respondents with High (>30) versus Low (≤ 30) Levels of Illness Anxiety

	High Whiteley (WH) <i>M (SD)</i>	Low Whiteley (WL) <i>M (SD)</i>	<i>t</i>	<i>p</i> value	Effect Size (<i>d</i>)
Age	32.87 (11.83)	33.93 (13.70)	.74	.46	.18
Years of Education	15.37 (2.76)	16.33 (1.97)	3.00*	<.01	.36
Number of Diseases Feared	4.92 (3.66)	1.83 (1.82)	-7.45*	<.01	.88
Sheehan Disability Scale (SDS)	17.99 (7.58)	7.92 (6.10)	-4.74*	<.01	1.34
Total Score					
• SDS Work	5.86 (2.78)	2.90 (1.73)	-3.36*	<.01	1.07
• SDS Social	6.45 (2.76)	2.91 (2.21)	-4.22*	<.01	1.29
• SDS Family	6.31 (2.66)	3.82 (2.99)	-3.05*	<.01	.93
Duration of Checking (Most Time/Day in the Past Month)	2.28 (.93) "1-3 hours"	1.30 (.49) "Less than one hour"	-9.13*	<.01	1.10
Frequency of Checking (Worst Day/ Past Year)	3.39 (1.12) "2-4 times per day"	2.06 (.91) "1 time per day"	-10.11*	<.01	1.21
Anxiety During Internet Checking	5.01 (1.67) "Slightly more anxious"	3.78 (1.64) "No change in anxiety"	-6.12*	<.01	.74
Anxiety After Internet Checking	5.02 (1.64) "Slightly more anxious"	3.49 (1.61) "Slightly less anxious"	-7.80*	<.01	.96
Gender (female)	WH 64.8%	WL 76.9%	χ^2 value 4.59*	<i>p</i> value .03	Effect Size (<i>r_g</i>) .08
Ethnicity (white)	78.8%	73.8%	1.11	.29	.04
Health Insurance	80.3%	82.5%	.22	.64	.02
Health Education	13.2%	21.8%	4.23*	.04	.08
Medically Stable	72.5%	56.9%	6.89*	<.01	.10
Anxiety During Internet Checking (Endorsed Worsening ^a)	68.3%	40.0%	25.05*	<.01	.18
Anxiety After Internet Checking (Endorsed Worsening ^a)	67.2%	28.8%	45.03*	<.01	.23

Note:

* = $p < 0.05$

^a "Worsening" as defined as a score of 5, 6, or 7 on the CGI indicating "Slightly-" to "Significantly More Anxious"; *n* WH = 640, except for SDS scores where *n* = 399; *n* WL = 80, except for SDS scores where *n* = 13.

Table 3
Descriptors of Long (>3 hours) versus Short-duration (<1 hour) Internet Symptom Searchers

	High Use (>3 hrs/ Day) M (SD)	Low Use (<1 hr/ Day) M (SD)	t	p value	Effect Size (d)
Age	33.53 (12.40)	32.95 (12.97)	-4.6	.65	.05
Years of Education	15.19 (2.99)	15.96 (2.36)	2.82*	<.01	.28
Number of Diseases Feared	5.38 (4.29)	3.43 (2.82)	-5.30*	<.01	.53
Sheehan Disability Scale (SDS) Total Score	20.13 (7.04)	14.18 (7.86)	-5.86	.12	.80
• SDS Work	6.50 (2.67)	4.64 (3.03)	-4.62	.12	.65
• SDS Social	7.11 (2.55)	5.23 (2.86)	-5.04	.10	.70
• SDS Family	6.94 (2.45)	5.08 (2.91)	-5.03*	.02	.72
Whitely Total Score	56.26 (8.63)	41.13 (15.00)	-12.70*	<.01	1.30
Frequency of Checking (Worst Day/Past Year)	4.01 (.93) "5 of more times"	2.34 (1.08) "1 time per day"	16.74*	<.01	1.67
Anxiety During Internet Checking	5.14 (1.60) "Slightly more anxiety"	4.37 (1.83) "No change in anxiety"	-4.54*	<.01	.45
Anxiety After Internet Checking	5.28 (1.55) "Slightly more anxiety"	4.17 (1.83) "No change in anxiety"	-6.63*	<.01	.66
			χ^2 value	p value	Effect Size (r_ϕ)
Gender (Female)	56.2%	75.0%	14.69*	<.01	.34
Ethnicity (White)	75.7%	66.2%	0.28	.60	.03
Health Insurance	77.0%	80.0%	0.54	.46	.03
Health Education Degree	10.8%	18.7%	5.12*	.02	.11
Medically Stable	72.5%	68.3%	0.79	.37	.05
Anxiety During Internet Checking (Endorsed Worsening ^a)	72.1%	51.9%	17.87*	<.01	.21
Anxiety After Internet Checking (Endorsed Worsening ^a)	71.7%	46.0%	28.1*	<.01	.26

Notes:

* = $p < .05$;

^aWorsening Anxiety" as defined as a score of 5, 6, or 7 on the CGI indicating "Slightly" to "Significantly More Anxiety"; n low internet use = 185, except for SDS scores where $n = 76$; high internet users $n = 226$, except for SDS scores where $n = 161$.