Title: The CSS-12: Development and validation of a short-form version of the cyberchondria severity scale

Short title: *CSS-12*

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Abstract:

Cyberchondria is defined as an increase in anxiety about one's health status as a result of excessive online searches. McElroy and Shevlin (2014) developed the first multi-dimensional, self-report measure of this construct - the Cyberchondria Severity Scale (CSS). The CSS consists of 33 items which can be summed to form a total score, and/or 5 subscale scores. The aim of the present study was to develop a short-formversion of the CSS, removing the 'Mistrust' subscale. Participants were undergraduate students from two UK universities (*N*=661, 73% female, M_{age} = 22.19 years, *SD* =5.88). Students completed the CSS, Short Health Anxiety Inventory (SHAI) and Generalised Anxiety Disorder Assessment (GAD-7). Twelve items were chosen for retention in the short-form based on an exploratory factor analysis. These itemscorresponded to the 4 factors previously identified in the 33-item scale (minus the 'Mistrust' subscale). Confirmatory factor analysis was used to validate the structure of the CSS-12. Confirmatory bifactor modelling indicated that the majority of item covariance was accounted for by a general cyberchondria factor. Construct validity was assessed by examining associations with the SHAI and GAD-7, with stronger correlations observed between the CSS-12 and the SHAI (compared to the GAD-7). The CSS-12 is a brief, reliable, and valid measure of worry/anxiety attributable to excessive online health research.

Introduction

The internet has rapidly become the general public's primary source of health-related information. Convenient and low-cost access to health information undoubtedly has its advantages, such as improved health literacy and empowered health decisions.[1-3] However, there may also be drawbacks to consider when dealing with such an abundance of largely unregulated information. For example, a nationally representative survey of adults in the United States found that 35% of respondents had used the internet to self-diagnose a medical condition within the previous year.[4] Self-diagnosis is a crude process that is often based on ambiguous and conflicting information.[5] Furthermore, the information returned by popular search engines may be biasedtowards rare/potentially life-threatening conditions. For instance, White and Horvitz[6] found that information about amyotrophic lateral sclerosis (ALS) was the most common outcome from a web search of the symptom 'muscle twitch', despite the fact that ALS has an annual incidence rate of 1 in 55,000. As such, those engaging in self-diagnosis may draw premature conclusions about their health status, and in turn experience unnecessary levels of worry and distress.[7,8]

The term 'cyberchondria' has been used to describe this increase in anxiety as a result of online health searches.[6,9] Cyberchondria combines a behavioural pattern (i.e. carrying out excessive web searches) with an ensuing emotional state (i.e. worry about health). Even though it is intrinsically related to diagnostic and trait-like constructs such as health anxiety/hypochondriasis, it has been suggested that cyberchondria represents a distinct construct.[9] This is due to the fact that, although individuals who are health anxious may be more likely to search for health information online, those with no prior health-anxiety may also experience distress as a result of such searches.[9] The core feature of cyberchondria is the element of escalation/excessiveness, whereby individuals spend an undue and increasing amount of time searching for information.[6,9]

Early studies in this area were hampered by inconsistent definitions of cyberchondria, and an over-reliance on single-item measures.[5,7] In an attempt to address these issues McElroy

and Shevlin[10] developed the Cyberchondria Severity Scale (CSS), a multi-dimensional measure of cyberchondria. This self-report scale consists of 33 items, corresponding to five correlated domains: i) excessiveness (escalating/repeated nature of searches), ii) compulsion (web searches interfering with other aspects of on/offline life), iii) distress (negative emotional response), iv) reassurance (searches driving individuals to seek out professional medical advice) and v) mistrust (conflict arising when medical professional and online self-diagnosis do not align).[10] Since its original publication, follow-up studies have validated the structure and psychometric properties of the CSS,[11-14] and the scale has been translated and validated in several languages.[15-17]Furthermore, Norr and colleagues[12] used confirmatory bifactor modelling to explore the dimensionality of the CSS, concluding that the scale measures a unitary construct (i.e. a general cyberchondria factor), as well as containing meaningful lower-order dimensions.

Although it has generally performed well in psychometric studies, there have been suggestions to refine the CSS. For instance, it has been suggested that the 'Mistrust' factor should be removed from the scale, due to its theoretical ambiguity, low correlations with the other four factors, and its failure to load on a general cyberchondria factor.[11,12] On a practical level, the scale has been criticised for its length and the inclusion of several items that may not be relevant or specific to Cyberchondria.[9,16] A prior attempt to cnstruct a refined short-form version of the CSS was conducted by Barke and colleagues.[16] Using principal components analysis (PCA) and confirmatory factor analysis in two separate samples (n_1= 500, n_2=348), they derived the CSS-15 which consisted of three items from each of the five factors. This study, however, had several potential limitations that must be considered. First, items were chosen based solely on their performance on the PCA (i.e. those with the highest loadings), with no consideration given to item wording, content or other psychometric properties (e.g. impact on scale reliability). Second, despite the well-documented issues with the 'Mistrust' factor, items from this dimension were retained in the final scale. Third, PCA itself is not appropriate for effect indicators.[18,19] As such, further refinement of the CSS is required.

The present study aimed to construct and validate a short-form version of the CSS. In order to balance the desire to develop a short scale that is quick to complete and score, and also can generate a range of scores that adequately reflect individual differences, it was decided that 3 optimal items per subscale would be selected. It was predicted that the structure of this short-form would mirror that of the original CSS, with the exclusion of the 'Mistrust' factor. Furthermore, in line with previous research,[12] it was hypothesized that the majority of shared variance would be accounted for by a general cyberchondria factor. Concurrent, convergent and divergent validity were also assessed by examining associations with health anxiety and generalized anxiety. Specifically, it was predicted that the short-form version of the CSS would demonstrate stronger correlations with health anxiety than generalized anxiety.

Methods

Participants

Undergraduate students were recruited from two UK universities (*N*=661). Participants completed questionnaires online, and received credits as part of an experiment participation scheme. Respondents wereprimarily female (73%), with a mean age of 22.19 years (*SD* =5.88). The vast majority of the sample were unmarried (96%) and reported their ethnicity as white (94%). Prior to data collection, ethical approval was obtained from the university ethics committees of both participating institutions.

Measures

Cyberchondria Severity Scale (CSS)[10]

The cyberchondria severity scale consists of 33 items that are scored on a 5-point Likert-type scale (ranging from '1=never' to '5=always'). All 33-items can be summed to form a total score, and/or 5 separate subscales: i) 'Excessiveness', ii) 'Compulsion', iii) 'Distress', iv) 'Reassurance Seeking', and v) 'Mistrust of Medical Professionals'. Research has shown

that the CSS and its subscales demonstrate good psychometric properties, including internal consistency and convergent/divergent validity.[11,15,17]

Short Health Anxiety Inventory (SHAI)[20]

The SHAI is an 18-item measure of health anxiety. Questions (e.g. "I do not worry about my health") are scored on a 4-point Likert-type scale. The SHAI has demonstrated good reliability and utility in both clinical and general population samples.[20,21]. Internal consistency was high in the present sample (Cronbach's α=0.90).

Generalised Anxiety Disorder Assessment (GAD-7)[22]

The GAD-7 is a 7-item self-report questionnaire that assesses the prevalence of symptoms of general anxiety over the past 2 weeks (e.g. "Over the last 2 weeks, how often have you been bothered by the following problems? - Feeling nervous, anxious or on edge"). Each item consists of a 4 point Likert-scale indicatingthe frequency of the experience ('1 = Not at all' to '4 = Nearly every day'). Studies have demonstrated good reliability and validity in both clinical and general populations.[22,23] Internal consistency was high in the present sample (Cronbach's α=0.91)

Statistical analysis

Participants were randomly split into two sub-samples (n_1 = 332, 75% female; n_2 = 329, 72% female). Scale-level (Cronbach's α) and item-level analyses (item means, standard deviations, item-total correlations, Cronbach's α if deleted) were conducted separately for the two sub-samples. Subsequent analyses were conducted in two steps.

Step 1

In order to identify items that were suitable for retention in the short-form scale, an exploratory factor analysis (EFA) was performed on sub-sample 1. Prior to the EFA, the factorability of the data was examined using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. The number of factors to be extracted

were determined using Horn's parallel analysis[24] and by inspecting the scree plot and the number of factors with eigenvalues above 1.[25] The EFA was conducted using maximum likelihood estimation with geomin rotation.[19] Three items from each factor were then chosen for inclusion in the short-form based on the following criteria: i) factor loadings (high loadings, low/no cross-loadings), ii) endorsement rates (i.e. items with considerable floor and ceiling effects were excluded), and iii) impact on sub-scale internal consistency. In cases where items demonstrated similar psychometric properties, items were considered in terms of their length and content, with preference given to short and clearly worded items, and those deemed applicable to the widest range of respondents. For instance, the item "Researching symptoms or perceived medical conditions online interrupts other research (e.g. for my job/college assignment/homework)" was not retained as it was deemed applicable only to a narrow range of people (i.e. those who used computers for professional purposes).

Step 2

After selecting the final set of items, confirmatory factor analysis was performed in order to confirm the structure and explore the uni-/multi-dimensionality of the short-form. Unidimensional, correlated factor, and bifactor models were tested in sub-sample 2 using robust maximum likelihood estimation.[26] Model fit was assessed using the following indices: the chi-square statistic, the comparative fit index (CFI),[27] the Tucker-Lewis Index (TLI),[28] the Root Mean Square Error of Approximation (RMSEA),[29] and the standardized root mean square residual (SRMR).[30] CFI and TLI values of greater than 0.90 indicate acceptable model fit [31]. General guidelines suggest that RMSEA values of less than .05 indicate close fit and values up to .08 indicate reasonable errors of approximation.[30] However, research has demonstrated that the RMSEA may be impacted both by sample size and the complexity of the model (i.e. biased in favour of models with high degrees of freedom), and thus an upper limit of 0.10 may be more appropriate when testing simple models using smaller samples.[32,33] SRMR values of between 0.5 and 0.8 are considered acceptable.[30] Models were compared using the Satorra-Bentler scaled chi-square difference test,[34] and three comparative

fit indices: i) the Akaike information criteria (AIC),[35] ii) the Bayesian Information Criteria (BIC),[36] and the sample–size adjusted Bayesian Information Criteria (SABIC). For each measure of comparative fit, lower values indicate a better fitting model. All models were estimated using Mplus version 7.4.[37]

Three bifactor indices were used to explore the uni-/multi-dimensionality of the short-form: i) omega hierarchical (ωH), ii) explained common variance (ECV), and percentage of uncontaminated correlations(PUC).[38] ωH determines the proportion of the total score variance that is attributable to the general factor, after controlling for the specific factors by dividing the squared sum of the factor loadings of the general factor by the estimated variance of the total scores.[38] High values of ωH (>0.8) suggest that the general factor is the dominant source of variation in scores.[38] The ECV is used to test the unidimensionality of a scale by dividing the variance explained by the general factor by the variance explained by the general and specific factorsombined.[39] Values range from 0 to 1, with values closer to 1 suggesting greater unidimensionality. Guidelines vary as to what ECV values indicate unidimensional scoring should be used, ranging from 0.6 [40] to 0.85.[41] The ECV, however, may be impacted by the structure of the data (e.g. number of factors and indicators). The PUC is calculated by dividing the number of correlations between items from specific factors by the total number of item correlations and reflects the level of structural bias effecting the ECV. PUC values of >0.8 suggest that the ECV is less likely to be obscured by bias.[40]

Convergent and discriminant validity were assessed by correlating scores on the CSS short-form with scores on conceptually related measures; the SHAI and GAD7. It was predicted that the CSS-12 would positively correlate with both measures, with a higher correlation observed between the CSS-12 and SHAI, reflecting their conceptual similarity.

Results

Step 1: EFA using random sub-sample 1

Item means, standard deviation, and item-total correlations for the 33-tem scale in sub-sample 1 are presented in supplementary Table S1. Item means (*SD*) ranged from 1.60 (0.93) to 4.17 (1.18), and item-total correlations (corresponding to relevant subscales) ranged from 0.43 to 0.83.

Results from the KMO Test for Sampling Adequacy (*KMO* = 0.94) and Bartlett's test for sphericity (χ^2 = 6664.13, *df* = 528, p<0.001) suggested that the data were suitable for factor analysis. A decision was made to extract five factors based on Horn's parallel analysis, visual inspection of the scree plot (supplementary Figure S1), and an examination of factor eigenvalues. The five factors corresponded to those identified in previous studies: i) 'Excessiveness', ii) 'Compulsion', iii) 'Distress', iv) 'Reassurance Seeking', and v) 'Mistrust of Medical Professionals'. Factor loadings, inter-factor correlations and internal consistency values (Cronbach's α) for this five-factor solution are presented in the online supplementary materials (Table S2). Inter-factor correlations were positive, significant, and moderate between 'Excessiveness', 'Compulsion', 'Distress', and 'Reassurance Seeking' factors (*r*=0.34 – 0.54). The 'Mistrust of Medical Professionals' factor did not correlate significantly with any of the other four factors. It also demonstrated low internal consistency (α = 0.64), and therefore items from this factor were excluded from the short-form. Three items from each of the remaining four factors were retained in the short-form based on a combination of their factor loadings, endorsement rates, impact on sub-scale internal consistency, item length and item content. Item analyses for these final twelve items are presented in Table 1.

<Table 1 here>

Internal consistency for the CSS-12 total scale was excellent (α = 0.90), and consistency values were in the acceptable-good range for the subscales (α = 0.73 – 0.87; Table 2).

Step 2: CFA using random sub-sample 2

Fit statistics for unidimensional, first-order (4 correlated factors) and bifactor models of the CSS-12 are presented in Table 2. The unidimensional model fit the data poorly, whereas the first-order and bifactor models provided adequate model fit based on the CFI, TLI, RMSEA and SRMR.

<Table 2 here>

The bifactor model had the lowest values on all three measures of comparative fit, however the difference in BIC values (bifactor v first-order) was marginal. A Satorra-Bentler scaled chi-square difference test (χ^2 Δ = 29.50, Δdf = 6, p <0.01) indicated that the bifactor model provided a significant improvement in fit, and thus was judged the best fitting model. Standardised factor loadings for this model are presented in Table 3.

<Table 3 here>

Additional bifactor indices ($G\mathcal{O}H$ = 0.82; ECV= 0.63) indicated that the majority of shared variance was accounted for by the general factor, indicating that all 12 items from the scale can be summed to form a total score. Also, the PUC value (0.82) indicated that the data structure was unlikely to have biased the results of the bifactor analysis.

In order to examine convergent and discriminant validity, a SEM model was estimated in which the general and specific (orthogonal) cyberchondria factors were allowed to correlate with generalized anxiety (GAD-7) and health anxiety (SHAI; χ^2 = 1497.01; df = 606; p<0.001; RMSEA = 0.07; CFI = 0.84; TLI = 0.83; SRMR = 0.06). None of the specific factors correlated significantly with health anxiety or general anxiety. As predicted, the general cyberchondria factor demonstrated a higher correlation with the SHAI (r=0.53) than with the GAD-7 (0.30).

Discussion

The present study focussed on the development and validation of the CSS-12, a short form version of the Cyberchondria Severity Scale.[10] Twelve items from the original pool of 33 were retained in this short-form scale. A formatted and free-to-use version of the CSS-12 is available in the online supplementary materials (S2).

The CSS-12 demonstrated good psychometric properties overall. Internal consistency values for both the total scale and sub-scales were acceptable to excellent, and comparable with those found in previous studies that employed the full 33-item measure.[11,15,16] Furthermore, the factor structure mirrored that of the full 33-item version of the scale, with the omission of the problematic 'Mistrust' factor. The 'Excessiveness'factor reflects multiple and repeated online searches for health information, and as such captures the excessive, escalatory nature of Cyberchondria.[6,9] The 'Distress' factor measures the anxiety-enhancing effect of researching symptoms/medical conditions online. The 'Reassurance' factor captures further emotional distress/worry (to the extent where the individual seeks out professional medical attention).[42] Items from the fourth factor ('Compulsion') pertain to online health searches interfering with other aspects of on/offline life. Again, this highlights an excessive quality to Cyberchondria.[6,9]

Furthermore, confirmatory bifactor modelling (CBM) indicated that a general cyberchondria factor accounted for the majority variance shared amongst items. Similar findings using the 33-item scale were reported by Norr et al.[12] Collectively, these findings support the view that cyberchondria is a unidimensional construct, with meaningful covariation contributed by lower-order factors. In practice, this means that items can be summed to form a total score, with higher scores reflecting greater severity.[39] Despite the strong performance of this general factor, the four specific factors did account for a non-trivial amount of variance, suggesting there may be some utility to these subscales if considered in conjunction with the total score. Indeed, using the CBM approach, it would be possible to ascertain whether different facets of cyberchondria have shared/unique associations with specific risk factors and outcomes. However, the use of CSS-12 sub-scales in isolation is not recommended due to the considerable amount of covariance accounted for by the general factor. Further research into the dimensionality of the CSS-12 may help clarify this issue.

Similar to the 33-item version of the scale,[10,11,43] the CSS-12 demonstrated convergent and discriminant validity. As predicted, the general cyberchondria factor correlated significantly and positively with both GAD (β = 0.3) and health anxiety (β = 0.53), with the effect notably higher in the case of health anxiety. The strength of this effect suggests that cyberchondria and health anxiety are strongly associatedconstructs, a finding evidenced in previous studies.[43,44] This overlap, however, remains poorly understood. One interpretation is that cyberchondria is merely a reassurance seeking behaviour associated with health anxiety/hypochondriasis, and therefore cannot be considered a unique construct in its own right [5]. Indeed, given the ease of access with which individuals can now access the internet, it is difficult to envision a situation where online health research *isn't* a core aspect of health anxiety/hypochondriasis in the modern world, and research has shown that those who score higher on measures of health anxiety are more likely to search for health information online.[7,8] However, the above referenced studies were cross-sectional, therefore the direction of causality cannot be established. Indeed, it is plausible that, at least for some individuals, online searches may precede and initiate a state of health anxiety. The overlap between these constructs is further complicated as cyberchondria has also been associated with broader psychological mechanisms that are common across a variety anxiety disorders, e.g. intolerance of uncertainty.[13] The development of a well-validated measure of cyberchondria represents a key step as we seek to improve our understanding of potential causal pathways between health anxiety and online health research.

The findings of the present study should be interpreted in line with the following limitations. First, we used a convenience sample of undergraduate students, therefore the findings may not generalize to other populations. There are both strengths and limitations to the use of university students for the study of cyberchondria. Strengths include their high levels of computer literacy and low likelihood of chronic and/or debilitating health problems. A potential weakness may be that worries regarding health may be lower in this age group compared with older demographics.[45] Furthermore, as recruitment focussed on psychology students, the sample reflected the demographic breakdown of this population; i.e.

the sex ratio was highly skewed towards females. Finally, the samples used in the present study were relatively modest in size, although they were above minimum recommended cut-offs for factor analysis.[46]

Conclusions

This study details the development and validation of a short-form version of the cyberchondria severity scale (CSS-12). The latent structure of the CSS-12 corresponds to four previously identified factors; 'Excessiveness', 'Distress', 'Compulsion', 'Reassurance'. Confirmatory bifactor modelling indicated that the CSS-12 is best scored as a unidimensional scale, although the sub-scales may provide useful additional information.

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Table 1. Means, standard deviations, item-total correlations*, and α if removed * of CSS-12 items (sub-sample 2)

Item	*M*	*SD*	Item-total Correlation	α if removed	*N*
1	3.20	1.31	0.75	0.72	329
2	2.66	1.27	0.75	0.73	328
4	2.35	1.12	0.51	0.69	328
10	2.45	1.28	0.75	0.81	328
12	1.70	0.96	0.74	0.82	327
13	2.84	1.31	0.60	0.87	328
14	1.58	0.87	0.74	0.82	328
16	1.59	1.00	0.57	0.62	328
17	1.55	0.88	0.76	0.80	327
20	2.20	1.13	0.72	0.84	327
22	2.47	1.29	0.77	0.79	326
26	1.83	1.02	0.58	0.61	327

*corresponding to subscale.

Table 2. Alternative factor models tested on sub-sample 2

Model	χ^2	*df*	CFI	TLI	RMSEA (90% CI)	SRMR	AIC	BIC	SABIC
One-factor	525.07*	54	0.70	0.63	0.16 (0.15-0.18)	0.10	10489.02	10625.68	10511.49
Four-factor	162.10*	48	0.93	0.90	0.09 (0.07-0.10)	0.06	9989.47	10148.90	10015.68
Bifactor	132.96*	42	0.94	0.91	0.08 (0.07-0.10)	0.05	9965.88	10148.08	9995.83

*$p<0.001$

Table 3. Standardised factor loadings and internal consistency (Cronbach's α) for sub-sample 2

Item	CYB	EXC	COMP	DIST	REAS
1	0.59*	0.76*			
2	0.66*	0.50*			
13	0.71*	0.20*			
12	0.61*		0.55*		
14	0.60*		0.55*		
17	0.58*		0.64*		
10	0.69*			0.46*	
20	0.60*			0.53*	
22	0.74*			0.46*	
4	0.67*				0.15
16	0.55*				0.48*
26	0.57*				0.45*
α	0.90	0.83	0.87	0.87	0.73

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Supplementary Materials

Table S1. Means, standard deviation, item-total correlations*, and α if removed * in sub-sample 1

Item	Mean	SD	Item-total Correlation	α if deleted	N
1	3.21	1.21	.718	.851	332
2	2.73	1.26	.696	.853	332
3	2.06	1.12	.661	.925	332
4	2.41	1.08	.617	.785	330
5	2.42	1.18	.802	.905	329
6	1.90	0.98	.769	.915	331
7	2.19	1.25	.718	.912	329
8	1.87	1.03	.779	.915	330
9	4.17	1.18	.429	.565	331
10	2.60	1.26	.726	.911	331
11	2.22	1.16	.598	.864	330
12	1.73	1.01	.827	.911	330
13	2.86	1.24	.737	.848	330
14	1.64	0.94	.759	.916	330
15	2.09	1.22	.642	.778	329
16	1.67	1.06	.594	.790	330
17	1.62	0.93	.769	.915	331
18	2.33	1.15	.714	.852	331
19	2.16	1.20	.536	.870	331
20	2.23	1.16	.694	.913	330
21	3.54	1.28	.452	.880	329
22	2.50	1.22	.795	.905	331
23	1.79	1.04	.610	.919	331
24	1.62	0.91	.692	.921	330
25	1.60	0.93	.761	.916	328
26	2.04	1.10	.628	.782	330
27	2.62	1.39	.571	.798	331
28	3.93	1.33	.477	.494	331
29	2.27	1.19	.787	.906	331
30	2.73	1.21	.643	.859	328
31	1.90	1.10	.741	.910	329
32	2.12	1.12	.480	.812	329
33	3.26	1.38	.438	.552	329

*corresponding to relevant subscale.

Table S2. EFA Factor loadings, factor correlations and internal consistency values (Cronbach'α) in sample 1

Item	EXC	COMP	DIST	REAS	MST
1*	0.813	–	–	–	–
2*	0.896	–	–	–	–
3	0.372	0.579	–	–	–
4*	–	–	–	0.459	–
5	–	–	0.800	–	–
6	–	0.689	–	–	–
7	–	–	0.652	–	–
8	–	0.726	–	–	–
9	–	–	–	–	0.478
10*	–	–	0.805	–	–
11	–	–	–	–	–
12*	–	0.807	–	–	–
13*	0.476	–	–	–	–
14*	–	0.606	–	–	–
15	–	–	–	0.618	–
16*	–	–	–	0.559	–
17*	–	0.626	–	–	–
18	0.555	–	–	–	–
19	0.320	–	–	–	–
20*	–	–	0.627	–	–
21	–	–	–	–	0.432
22*	–	–	0.895	–	–
23	–	–	0.485	–	–
24	–	0.491	–	0.323	–
25	–	0.645	–	0.394	–
26*	–	–	–	0.721	–
27	–	–	–	0.615	–
28	–	–	–	–	0.605
29	–	–	0.800	–	–
30	0.319	–	0.346	–	–
31	–	–	0.714	–	–
32	–	–	0.519	–	–
33	–	–	–	–	0.559
EXC		0.342**	0.521**	0.364**	0.256
COMP			0.476**	0.457**	-0.161
DIST				0.537**	0.060
REAS					-0.081
α	0.875	0.926	0.921	0.820	0.637

*Note. Factor loadings <0.3 omitted. *Retained in CSS-12. ** p <0.01*

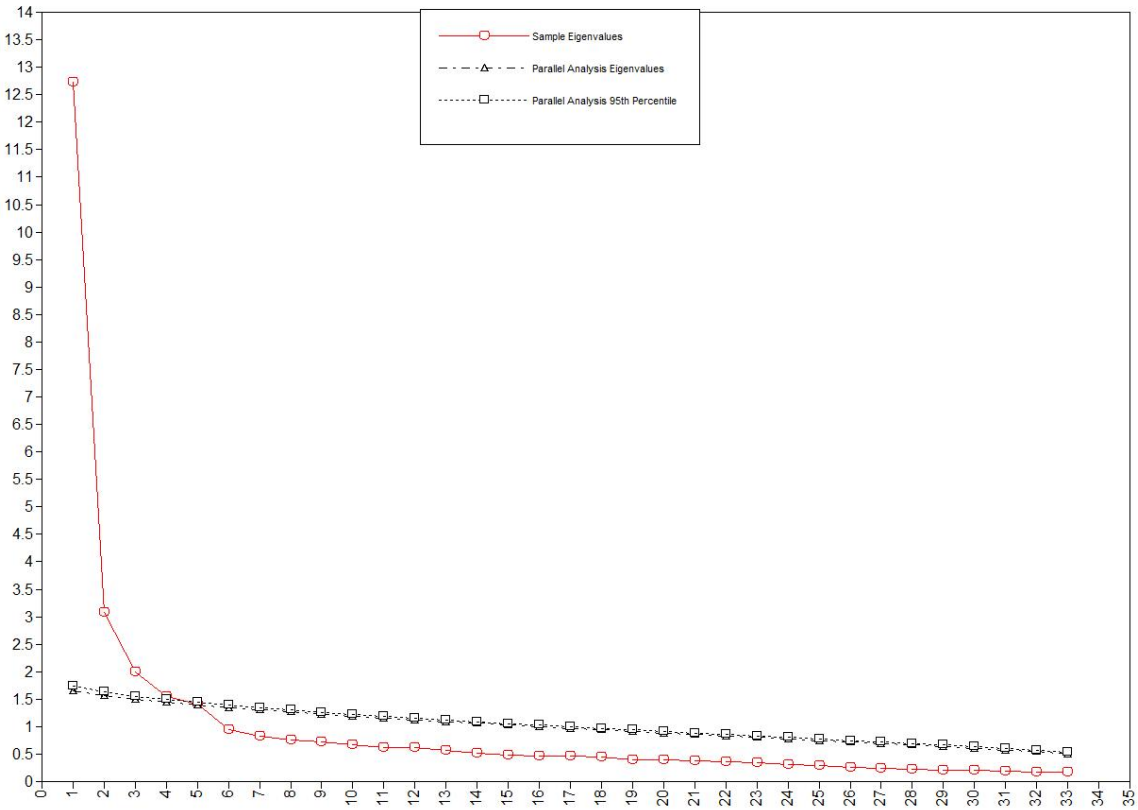

Fig S1. Scree plot and results from parallel analysis.

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Supplementary Materials

The Cyberchondria Severity Scale Short-Form (CSS-12)

Author Instructions

Items can be summed to form a total score (0-60). The following items correspond to 4 unique subscales;

Scale	*Description*	*Items*
Excessiveness	Escalating/repeated nature of searches	1, 3, 6
Distress	Anxiety/Distress as a result of searches	4, 8, 9
Reassurance	Searches driving individuals to seek out professional medical advice	5, 11, 12
Compulsion	Web searches interfering with other aspects of on/offline life	2, 7, 10

CSS-12

Please read the following statements and indicate how they typically apply to you by circling the appropriate number. Please note that this questionnaire relates to *perceived medical conditions* (i.e. conditions you think you might have) rather than conditions that have been diagnosed by a medical profession.

	Never	Rarely	Some-times	Often	Always
1. If I notice an unexplained bodily sensation I will search for it on the internet	1	2	3	4	5
2. Researching symptoms or perceived medical conditions online distracts me from reading news/sports/entertainment articles online	1	2	3	4	5
3. I read different web pages about the same perceived condition	1	2	3	4	5
4. I start to panic when I read online that a symptom I have is found in a rare/serious condition	1	2	3	4	5
5. Researching symptoms or perceived medical conditions online leads me to consult with my GP	1	2	3	4	5
6. I enter the same symptoms into a web search on more than one occasion	1	2	3	4	5
7. Researching symptoms or perceived medical conditions online interrupts my work (e.g. writing emails, working on word documents or spreadsheets)	1	2	3	4	5
8. I think I am fine until I read about a serious condition online	1	2	3	4	5
9. I feel more anxious or distressed after researching symptoms or perceived medical conditions online	1	2	3	4	5
10. Researching symptoms or perceived medical conditions online interrupts my offline social activities (e.g. reduces time spent with friends/family)	1	2	3	4	5
11. I suggest to my GP/medical professional that I may need a diagnostic procedure that I read about online (e.g. a biopsy/ a specific blood test)	1	2	3	4	5
12. Researching symptoms or perceived medical conditions online leads me to consult with other medical specialists (e.g. consultants)	1	2	3	4	5