The Covert and Overt Reassurance Seeking Inventory (CORSI): Development, validation and psychometric analyses

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Abstract

Background: Reassurance seeking (RS) is motivated by perceived general and social/relational threats across disorders, yet is often under-recognized because it occurs in covert (i.e. subtle) and overt forms. Covert safety-seeking behaviour may maintain disorders by preventing corrective learning and is therefore important to identify effectively.
Aims: This study presents the validation and psychometric analyses of a novel measure of covert and overt, general and social/relational threat-related interpersonal RS.
Method: An initial 30-item measure was administered to an undergraduate sample ($N = 1626$), as well as to samples of individuals diagnosed with obsessive compulsive disorder (OCD; $n = 50$), anxiety disorders ($n = 60$) and depression ($n = 30$). The data were subjected to exploratory and confirmatory factor analyses, and validation analyses.
Results: An exploratory factor analysis using principal axis factoring with oblique rotation yielded five interpretable factors, after removing four complex items. The resulting 26-item measure, the Covert and Overt Reassurance Seeking Inventory (CORSI), evidenced good convergent and divergent validity and accounted for 54.99% of the total variance after extraction. Factor correlations ranged from $r = .268$ to $.736$, suggesting that they may be tapping into unique facets of RS behaviour. In comparison with undergraduate participants, all clinical groups had significantly higher total scores [t $(51.80–840) = 3.92–5.84$, $p < .001$]. The CFA confirmed the five-factor model with good fit following the addition of four covariance terms (goodness of fit index = .897, comparative fit index = .918, Tucker–Lewis index = .907, root mean square error approximation = .061).
Conclusion: The CORSI is a brief, yet comprehensive and psychometrically strong measure of problematic RS. With further validation, the CORSI has potential for use within clinical and research contexts.

Keywords: anxiety; assessment; depression; obsessive-compulsive disorder or OCD; reassurance seeking; validation

Introduction

Reassurance seeking (RS) is a behaviour recognized for its role in maintaining various mental disorders. Despite its prevalence (e.g. Starcevic *et al.*, 2012), facets of RS are under-represented in existing measures. The aim of this paper is to present the development, validation and psychometric analyses of a novel measure of RS behaviour.

Individuals with mental disorders including obsessive-compulsive disorder (OCD), depression and anxiety disorders [e.g. generalized anxiety disorder (GAD); social anxiety disorder (SAD)] may seek reassurance in ways that become repetitive and detrimental (e.g. American Psychiatric Association, 2013; Beesdo-Baum *et al.*, 2012; Coyne, 1976; Heerey and Kring, 2007; Parrish and Radomsky, 2010; Warwick and Salkovskis, 1985). Individuals with such

disorders may have biases towards evaluating uncertainty as threatening, and previous research has demonstrated an association between ambiguity and RS (e.g. Boelen and Reijntjes, 2009; Carleton *et al.*, 2012; Dugas *et al.*, 1997; Parrish and Radomsky, 2011; Tolin *et al.*, 2003). Across disorders, functions of RS appear largely the same (e.g. Rector *et al.*, 2011). Specifically, RS reduces distress, perceived threat and/or responsibility – at least in the short-term; long-term, it prevents individuals from learning corrective information about perceived threats or their ability to cope (e.g. Coyne, 1976; Halldorsson and Salkovskis, 2017a,b; Parrish and Radomsky, 2010; Salkovskis, 1999). This can be problematic if covert, or subtle, safety-seeking behaviours are not identified and subsequently addressed. Furthermore, when RS becomes pervasive, it is associated with consequences including relationship disruption, reduced workplace productivity, and distress (e.g. Coyne, 1976; Kobori *et al.*, 2012). Given its similarities across disorders, and considering significant co-morbidity rates, there is need for a measure that captures overlapping functions and consequences of RS behaviour (e.g. Kessler and Wang, 2008).

Conceptualizations of RS across disorders suggest that it is a repetitive safety-seeking behaviour following perceived general or social/relational threats, despite having received the information before (e.g. 'Are you really sure the door is locked?', 'Are you sure you still love me?'; e.g. Beesdo-Baum *et al.*, 2012; Coyne. 1976; Heerey and Kring, 2007; Parrish and Radomsky, 2010; Warwick and Salkovskis, 1985; see also Rachman, 2002). Notably, the examples above highlight *overt*, obviously noticeable RS, wherein someone seeks responses from a partner who is conscious of the question. However, reassurance seekers are commonly aware of possibilities for negative interpersonal consequences, and may instead engage in subtle, or *covert* RS (e.g. Kobori and Salkovskis, 2013; Parrish and Radomsky, 2010). An example of covert RS would be a person making a statement and waiting to see if another person disagrees, thereafter taking the *absence* of an objection as reassurance (e.g. 'I washed, so there are no germs...'; Kobori and Salkovskis, 2013; Kobori *et al.*, 2012; Parrish and Radomsky, 2010). Covert RS is viewed as a maintenance factor for mental health disorders in the same vein as overt RS and *in vivo* checking, by preventing corrective learning (e.g. about threat or one's ability to cope without receiving reassurance), which in turn may prevent clients from achieving best outcomes in therapy to reduce the behaviour (e.g. Parrish and Radomsky, 2010; Rachman, 2002). The social element of RS behaviour may increase motivation relative to other safety-seeking behaviour to make the behaviour unnoticeable by others; if it is effectively hidden, this may also have the effect of making covert RS unnoticed by clinicians when there is not an effective questionnaire to capture it.

Covert as opposed to overt RS is likely intended to reduce negative consequences, as explained by Coyne's interactional model (1976). Coyne's model suggests that individuals seek reassurance to reduce uncertainty/distress about relationships, self-worth or self-competence. Unfortunately, repeated RS eventually bothers significant others and leads to rejection, thereby confirming core fears (e.g. that they are unwanted/incompetent; Coyne, 1976). Individuals with OCD also report concern about the consequences of RS and that this is a motivation to become covert (Kobori *et al.*, 2012; Parrish and Radomsky, 2010). Individuals with other disorders probably also use covert RS to avoid negative interpersonal consequences, although this has been under-studied, perhaps due to lack of measures capturing covert RS. For instance, Heerey and Kring (2007) found that when non-anxious individuals were paired for conversation with socially anxious individuals, they produced more verbalizations of empathy and support than those paired with other non-anxious individuals, despite the researchers not finding a difference across groups in the pattern of verbal RS leading to empathy and support. This suggests that the socially anxious individuals may have been eliciting support in other ways than verbal RS. Indeed, it may feasibly be the case that individuals who engage in covert RS could be unaware of the extent to which they engage in the behaviour, and may be better able to report on the behaviour by responding to a questionnaire rather than having to freely report symptoms.

Currently, measures exist to assess aspects of RS, namely the (1) Reassurance Seeking Scale (RSS; Rector *et al.*, 2011), a 30-item measure assessing RS about decision-making, social attachment and general threats, but which does not differentiate covert RS; (2) Threat-related Reassurance Seeking Scale (TRSS; Cougle *et al.*, 2012), consisting of eight items assessing RS in response to perceived general threats/worry or evaluative threats, but which Cougle and colleagues (2012) note may lack comprehensiveness; and (3) Reassurance Seeking Questionnaire (ReSQ; Kobori and Salkovskis, 2013), a measure of RS in OCD consisting of four scales, each with several subscales, assessing reassurance Source (21 items), Trust (18 items), Intensity (16 items) and Carefulness (11 items), which is highly informative but could be too lengthy for use in research or clinical settings.[1] Beyond these, the Reassurance Questionnaire (Pugh *et al.*, 2013; Speckens *et al.*, 2000) was published with the separate intent of assessing whether patients feel reassured by doctors, and the Depressive Interpersonal Relationships Inventory contains a reassurance-seeking subscale (DIRI-RS; Joiner et al., 1992) which features only four items assessing overt social/relational RS and does not permit comprehensive assessment. Thus, there is not currently one measure that captures broadly applicable themes of overt and covert, general threat- and social/relational RS (e.g. Coyne, 1976; Parrish and Radomsky, 2010).

Overall, covert RS is presently difficult to identify, as it is intended to be unrecognized and is essentially absent from existing measures. Having a comprehensive measure of both overt and covert interpersonal RS could advance researchers' ability to identify the behaviour and could eventually help clinicians deliver more targeted interventions. Additionally, validating a measure including covert RS could illuminate the extent to which it is shared across disorders, thereby contributing to a more unified conceptualization of RS. This study therefore aimed to develop a psychometrically sound measure of covert and overt RS behaviour concerning general and/or social/relational threats.

Method

This study was reviewed and received ethical clearance from the University Human Research Ethics Committee at Concordia University (certificate no. UH2006-080-6).

Thirty initial items were developed by a licensed academic clinical psychologist with extensive experience working with individuals with anxiety, obsessive-compulsive and mood disorders in clinical and research contexts in conjunction with an advanced doctoral-level student specializing in RS behaviour. Additional consultation was also provided by a second licensed clinical psychologist with expertise also in anxiety and mood disorders in research and clinical settings, with experience with questionnaire construction for research and clinical purposes. Items were constructed by examining cognitive behavioural theories (e.g. Beck *et al.*, 1979; Coyne, 1976; Rachman and Hodgson, 1980; Salkovskis, 1985) and extracting common themes. Anecdotal clinical reports also informed construction, with the first author having many years of experience working clinically with individuals with problematic RS who report similar styles of seeking reassurance (e.g. seeking reassurance subtly to avoid bothering others), as well as overall themes in triggers and methods of seeking reassurance noted by the third author during interviews for other research studies with individuals with problematic RS. Items included RS about general threats (e.g. safety, mistakes), and social/relational threats (e.g. self-worth, relationships), and were constructed to reflect overt and covert/subtle RS. Items were rated on a 5-point, Likert scale from 0 ('not at all') to 4 ('very much').

All participants were treated in accordance with principles of ethical treatment of human research participants. This study was reviewed by and received clearance from a University

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[1]The RSS, TRSS and ReSQ were published after data collection for the current study was underway and were thus not available for inclusion as convergent measures. See also Discussion.

Human Research Ethics committee. Participants were debriefed following completion of all questionnaires and were invited to provide feedback as part of the discussion.

Participants

Data for validating the 30-item measure were collected from a sample of undergraduate students ($N = 1821$). Undergraduates were compensated with course credit. In addition, 30 individuals with a primary diagnosis of depression, 50 individuals with a primary diagnosis of OCD, and 60 individuals with a primary diagnosis of an anxiety disorder (e.g. GAD, SAD) were also tested to provide an initial description of clinical profiles on the measure, and to conduct known-groups analyses. These participants were recruited from the community via advertisements or were contacted through the laboratory's existing database of clinical participants, and were compensated $40. Primary diagnosis for the clinical groups (i.e. OCD, depression or anxiety) was established via the Anxiety Disorders Interview Schedule for the *DSM-IV* (ADIS-IV; Brown *et al.*, 1994). Co-morbidities were permitted, as this better represents realities of clinical populations than would diagnostically 'pure' groups. The primary diagnosis was established by the ADIS interviewer by determining the most severe, distressing and/or disabling symptoms. The first author also provided diagnostic consultation.

Measures

ADIS-IV (Brown et al., 1994)

The ADIS-IV is a semi-structured diagnostic interview assessing the presence and severity of mental disorders in adults. The interview demonstrates good inter-rater reliability ($\kappa = .81$; Brown *et al.*, 1994). Interviewers required a Bachelor's degree to qualify for administration and completed comprehensive training. Primary diagnosis was the disorder that received the highest severity rating and resulted in the greatest interference/distress.

Vancouver Obsessional Compulsive Inventory (VOCI; Thordarson et al., 2004)

The VOCI is a 55-item measure of obsessive-compulsive symptomatology. The VOCI had excellent internal consistency in the current undergraduate sample ($\alpha = .96$) as well as in the clinical sample when collapsing across groups ($\alpha = .96$). Previous research suggests that the VOCI has good to excellent internal consistency in both OCD ($\alpha = .85–.96$; Thordarson *et al.*, 2004) and student samples ($\alpha = .83–.96$; Radomsky *et al.*, 2006; Thordarson *et al.*, 2004). The VOCI was selected as a convergent measure based on the previously identified prevalence of RS in OCD (e.g. Starcevic *et al.*, 2012).

Beck Anxiety Inventory (BAI; Beck and Steer, 1993)

The BAI is a 21-item measure of anxiety symptom severity. The BAI had excellent internal consistency in the current undergraduate and aggregated clinical samples ($\alpha = .91–.94$). Previous research suggests the BAI has excellent internal consistency ($\alpha = .92$) and good convergent validity (Beck *et al.*, 1988). The BAI was selected as a convergent measure based on the prevalence of RS across anxiety disorders (e.g. Heerey and Kring, 2007).

Beck Depression Inventory – Second Edition (BDI-II; Beck, Steer, and Brown, 1996)

The BDI-II is a 21-item measure of depression symptomatology. The BDI-II had excellent internal consistency in the undergraduate and collapsed clinical samples ($\alpha = .91–.94$). The BDI-II previously demonstrated good internal consistency in an undergraduate sample ($\alpha = .90$;

Storch *et al.*, 2004), and good convergent and divergent validity. The BDI-II was selected as a convergent measure based on the prevalence of RS in depression (e.g. Joiner *et al.*, 1992).

Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965)

The RSES is a 10-item measure of global self-esteem. The RSES showed good internal consistency in the undergraduate and collapsed clinical samples ($\alpha = .85–.87$), and previously demonstrated excellent internal consistency ($\alpha = .91$; Sinclair *et al.*, 2010). The RSES was selected as a discriminant measure based upon the theorized negative association between RS and self-esteem.

Intolerance of Uncertainty Scale (IUS; Freeston et al., 1994)

The IUS is a 27-item, well-validated measure of perceptions of and reactions to ambiguous or worrying situations. The IUS was employed to provide criterion validity that negative reactions to uncertainty is associated with RS. The English version of the IUS has previously demonstrated excellent internal consistency ($\alpha = 0.94$) and re-test reliability ($r = .74$; Buhr and Dugas, 2002). The IUS also demonstrated excellent internal consistency in the current undergraduate ($\alpha = .96$) and collapsed clinical ($\alpha = .95$) samples.

Results

Data cleaning

Data from the ($N = 1821$) undergraduate participants were screened for missing/impossible values, of which there were none. Mahalanobis distance was calculated to identify multivariate outliers with $p < .001$ (Tabachnick and Fidell, 2007); 183 participants were identified and excluded. A further 12 participants were excluded due to being univariate outliers with standardized CORSI total scores exceeding $Z = 3.29$ (Field, 2009; Tabachnick and Fidell, 2007). This resulted in a final sample size of 1626. Skewness (0.96, $SD = 0.061$) and kurtosis (0.677, $SD = 0.121$) were within acceptable limits.

The final sample of undergraduates ($N = 1626$) was 85.2% ($n = 1385$) female. Participants averaged 23.2 years old ($SD = 6.02$), and ranged from 18 to 68 years old. The collapsed clinical sample had a mean age of 38.86 years ($SD = 15.10$), ranging from 18 to 80 years old, and was 59.0% ($n = 82$) female.

Half of the undergraduate cases ($n = 813$) were randomly selected for an exploratory factor analysis (EFA) to determine the CORSI's latent structure, surpassing typical guidelines for factor analysis sample size requirements (e.g. Gorsuch, 1983). The remaining half were reserved for a confirmatory factor analysis (CFA).

Part A. EFA

Principal axis factoring with oblique rotation was employed to determine the proportion of shared variance accounted for by the latent factors, while allowing for intercorrelations (e.g. Costello and Osborne, 2005; Martin and Savage-McGlynn, 2013). The data were assessed for multi-collinearity by examining the correlation matrix for values surpassing $r = .89$ (Field, 2009); however, no values surpassed $r = .69$ and there was no evidence of singularity. The Kaiser–Meyer–Olkin measure of sampling adequacy (KMO) was .954, in the superb range and indicating that factor analysis will likely yield unique and reliable factors (e.g. Hutcheson and Sofroniou, 1999). Similarly, the KMO statistic for each individual item fell at or above .90. Inspection of Bartlett's statistic ($\chi^2 (435) = 13911.68$, $p < .001$) indicated that factor analysis was probably appropriate.

The initial EFA produced five factors with eigenvalues greater than 1, with values of 12.173, 2.166, 1.852, 1.339 and 1.186, suggesting a five-factor solution using Kaiser's (1960)

greater-than-one rule. Scree plot inflections suggested two-, four-, five- or six-factor models (Cattell, 1966). Additionally, parallel analysis (O'Connor, 2000) was conducted to compare whether the extracted eigenvalues were larger than the mean of those obtained from randomly generated, uncorrelated data (Horn, 1965; Ledesma and Valero-Mora, 2007). The parallel analysis suggested to retain up to seven factors.

Taking the eigenvalues, scree plots and parallel analysis into account, two-, four-, five- and six-factor models were tested. Theoretical models of RS across disorders and the factors' interpretability were considered while deciding how many factors to retain (Hayton *et al.*, 2004). Items were considered for retention if a factor loading exceeded .32 and there were no cross-loadings exceeding .32 (Tabachnick and Fidell, 2007).

Two-factor model
A two-factor model accounted for 44.17% of the variance after extraction. Examination of the factor correlation matrix showed that the factors were moderately correlated ($r = .503$). One item was significant cross-loaded above .32 (Tabachnick and Fidell, 2007). Excluding the cross-loaded item, one factor encompassed 25 items whereas the second factor consisted of four items, rendering the factors substantially unbalanced. Additionally, the factors were not clearly interpretable.

Four-factor model
A four-factor model accounted for 52.05% of the variance after extraction. The correlation matrix showed correlations ranging from low ($r = .205$) to moderately strong ($r = .675$), indicating that some factors were closely related whereas others were more conceptually distinct. Nine items were cross-loaded at or above .32 (Tabachnick and Fidell, 2007) and thus were candidated for removal; however, doing so would result in the third factor retaining only two items, too few for a reliable factor.

Five-factor model
A five-factor model accounted for 55.00% of the variance after extraction. Correlations between the factors ranged from $r = .208$ to .690, suggesting that the factors may be tapping into unique facets of RS. Four items had complex loadings at or above .32 and were considered for removal (Tabachnick and Fidell, 2007). When excluding the four cross-loaded items, each of the five factors retained three to eight items, captured distinct facets of RS, and were readily interpretable.

Six-factor model
A six-factor model accounted for 57.12% of the variance after extraction. Inspection of the item content revealed a combination of interpretable and unclear factors, while examination of the correlation matrix revealed that the factors' associations ranged from $r = .247$ to .703. Three items loaded above .32 onto two factors and would therefore be removed (Tabachnick and Fidell, 2007), resulting in a total of 27 items.

Final model selection
On the basis of the EFA, consideration of theories (e.g. Coyne, 1976; Kobori and Salkovskis, 2013; Parrish and Radomsky, 2010), and anecdotal reports/observations from clinical practice, the five-factor model was chosen as the most parsimonious solution. Four items were removed due to significant cross-loadings as noted above resulting in 26 retained items, and the analysis was re-run forcing five factors. Please refer to Table 1 for information about the cross-loadings of

Table 1. Items removed from 30-item CORSI due to complex loadings

Item	Factor loadings
3. I often ask my partner/family members/roommate to reassure me that I remembered to lock the door, turn off the stove, unplug the clothes iron, etc.	O-G (.522) C-G$_P$ (.323)
13. I am always 'testing' my friends and family to see if they really care about me	C-SR (.521) O-SR (.504)
15. I sometimes ask others to reassure me again and again that I have done all that I can to make things safe	O-G (.426) O-SR (.322)
22. I would rather risk annoying other people with repeated requests for reassurance than to continue to feel anxious about something	O-G (.569) O-SR (.351)

Items are presented with numbering from the 30-item CORSI. Factor loadings are in parentheses. C-SR, Covert Social/Relational Threat RS; O-SR, Overt Social/Relational Threat RS; O-G, Overt General Threat RS; C-G$_P$, Covert General Threat Passive RS.

Table 2. Exploratory factor analysis of the reduced 26-item CORSI

	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings
Factor	Total	Per cent of variance	Cumulative %	Total	Per cent of variance	Cumulative %	Total
1	10.48	40.30	40.30	10.05	38.65	38.65	8.37
2	2.07	7.97	48.27	1.60	6.14	44.79	8.65
3	1.66	6.39	54.67	1.22	4.68	49.47	5.53
4	1.18	4.54	59.21	0.75	2.87	52.34	6.84
5	1.10	4.24	63.45	0.69	2.65	54.99	3.60

the four removed items, and to Table 2 for the initial, extraction and rotation factor descriptions of the 26-item model. Factor loadings of retained items are displayed in Table 3.

The first factor, labeled **Covert Social/Relational Threat RS (C-SR)**, consists of seven items related to subtle RS about relationships/self-worth (e.g. 'I often try to find out if others care about me without asking them directly'). The second factor, labeled **Overt General Threat RS (O-G)**, includes eight items concerning seeking reassurance openly from others in response to distress from general threats (e.g. 'I become so anxious when I am uncertain about something that I need to ask my friends or family for reassurance over and over again'). The third factor, labeled **Covert General Threat Passive RS (C-G$_P$)**, consists of four items assessing subtle RS about general threats, with the person taking a 'wait-and-see', observational approach to determine whether a situation/object is safe (e.g. 'If I am uncertain about the cleanliness of an object, I will wait until somebody else touches it before I do'). The fourth factor, labeled **Overt Social/Relational Threat RS (O-SR)**, consists of three items associated with obviously noticeable RS about relationships/self-competence (e.g. 'I sometimes threaten to end a friendship in order to see if my friends really care about me'). The fifth factor, labeled **Covert General Threat Active RS (C-G$_A$)**, consists of four items related to subtle yet active attempts to seek reassurance about general threats in a 'start-then-check' manner, (e.g. 'When I am anxious about doing something, I often start and if nobody around me warns me to stop, I assume it is OK to continue'). Upon consideration of the measure's factor structure, intended purpose and potential novel contributions, the measure was titled the **Covert and Overt Reassurance Seeking Inventory** (CORSI; please see Appendix).

Correlations between CORSI factors

A total score for each of the factors was obtained by summing its items. A total CORSI score was obtained by summing all items. Please refer to Table 4 for factor and total score means from the

Table 3. Factor loadings for exploratory factor analysis with Promax rotation of the retained 26 items

	Item	Factor loadings					
		1	2	3	4	5	h^2
1.	I often try to find out if others care about me without asking them directly	.80					.58
16.	I look to other people's moods when they are around me to determine whether they like me	.76					.60
28.	In social situations, I try to 'read' other people's body language to determine whether they like me	.71					.55
2.	I often make a statement about something that I've done to get information from others about how well I've done it	.68					.53
9.	In order to feel worthwhile, I need other people to continually show me that I am valued through their actions and gestures towards me	.64					.61
7.	I spend an excessive amount of time looking for signs of approval from others	.55					.67
5.	I sometimes make self-derogatory statements with the hope that someone will object to them	.51					.49
12.	I become so anxious when I am uncertain about something that I need to ask my friends or family for reassurance over and over again		.85				.73
21.	When faced with an important decision, I need to ask others for reassurance before I can make my final choice		.78				.54
6.	If I am unable to check something I am anxious about, I will ask others to reassure me that it is OK		.70				.52
11.	I often ask others to tell me if I have made the 'wrong' decision		.63				.58
4.	I have trouble accepting responsibility for something important without asking for reassurance that everything will be OK		.57				.50
17.	If I am really worried about something, it rarely seems good enough to have others reassure me about it only once		.50				.52
25.	If I have checked something repeatedly and still feel unsure, I ask others to reassure me that things are safe		.49				.48
18.	I spend far more time than most people looking to others for signs that things will be OK		.41				.65
8.	If I am uncertain about the cleanliness of an object, I will wait until somebody else touches it before I do			.80			.65
14.	I sometimes check the safety of an object or situation by looking to see how other people react to it			.61			.55
20.	If I am unsure about the safety of my food, I will wait until someone else has tried some before I do			.59			.45
10.	I always 'test the waters' before engaging in any activity that makes me anxious			.36			.45
23.	I annoy people with repeated requests for reassurance about their feelings for me and this causes problems in my relationships				.79		.71
19.	I sometimes threaten to end a friendship in order to see if my friends really care about me				.74		.48
27.	I have often been told that I seem 'insecure' because I constantly seek affirmation or approval from others				.53		.59
26.	When I am anxious about doing something, I often start and if nobody around me warns me to stop, I assume it is OK to continue					.84	.69
29.	If others do not object to my engaging in an activity, then it must be 'safe'					.69	.50
24.	If other people do not tell me otherwise, I can assume that I've got things under control					.65	.39
30.	I often try to find out if an object or situation is 'safe' without asking anybody directly					.44	.32

Items are numbered from the 30-item CORSI. RS factors: 1, Covert Social/Relational; 2, Overt General; 3, Covert General Passive; 4, Overt Social/Relational; 5, Covert General Active. h^2 = extraction communalities. Loadings below .32 are suppressed for clarity.

Table 4. CORSI 26-item undergraduate student and clinical sample means

	Undergraduate sample (N = 813)	Clinical samples		
		Obsessive-compulsive disorder (n = 50)	Anxiety disorder (n = 60)	Depression (n = 30)
CORSI Total	23.15 (15.17)	35.12 (22.78)***	35.92 (17.56)***	38.70 (17.63)***
CORSI C-SR	7.56 (5.54)	10.48 (6.88)***	12.40 (6.74)***	12.83 (6.64)***
CORSI O-G	7.28 (6.22)	11.42 (8.94)**	11.58 (7.26)***	13.80 (8.36)***
CORSI C-G_P	2.39 (2.35)	4.94 (3.86)[a]***	3.57 (2.75)[a]***	3.93 (3.34)**
CORSI O-SR	1.16 (1.76)	2.72 (2.86)***	2.78 (2.87)***	2.50 (2.45)**
CORSI C-G_A	4.75 (3.40)	5.56 (3.59)‡	5.58 (3.32)*	5.63 (3.05)

Data are presented with standard deviations in parentheses. CORSI, Covert and Overt Reassurance Seeking Inventory; RS factors: O-G, Overt General; C-G_A, Covert General Active; C-G_P, Covert General Passive; O-SR, Overt Social/Relational; C-SR, Covert Social/Relational. [a]Statistically significant difference in clinical group factor scores. Significance indicators represent the comparison between the undergraduate sample and the clinical group heading the column. ‡.10 < p < .05; *p < .05, **p < .01, ***p < .001.

Table 5. Correlations between the final 26-item CORSI factors and related variables

	CORSI factors									
	1. C-SR	2. O-G	3. C-G_P	4. O-SR	5. C-G_A	6. BDI	7. BAI	8. VOCI	9. IUS	10. RSES
1.	—	.736	.519	.609	.362	.487	.475	.591	.609	−.422
2.		—	.628	.656	.335	.469	.485	.651	.662	−.420
3.			—	.505	.325	.310	.365	.598	.477	−.233
4.				—	.268	.414	.374	.517	.494	−.317
5.					—	.157	.174	.277	.262	−.157

All correlations significant at p < .01. Results are derived from the undergraduate EFA sample. CORSI, Covert and Overt Reassurance Seeking Inventory; O-G, Overt General Threat RS; C-G_A, Covert General Threat Active RS; C-G_P, Covert General Threat Passive RS; O-SR, Overt Social/Relational Threat RS; C-SR, Covert Social/Relational Threat RS; BDI, Beck Depression Inventory – second edition Total score; BAI, Beck Anxiety Inventory Total score; VOCI, Vancouver Obsessive Compulsive Inventory Total score; IUS, Intolerance of Uncertainty Scale Total score; RSES, Rosenberg Self Esteem Scale.

undergraduate EFA sample, and to Table 5 for final correlations between the CORSI factors following removal of the four complex items.

Internal consistency

Within the collapsed clinical sample, internal consistency was good for the C-SR (α = .88) and O-G factors (α = .90), fair for the C-G_P (α = .72), C-G_A (α = .67) and O-SR factors (α = .70), and excellent for the overall 26-item measure (α = .93). In the undergraduate sample, internal consistency was good for the C-SR (α = .89) and O-G (α = .90) factors, fair for the C-G_P (α = .77), C-G_A (α = .75) and O-SR factors (α = .78), and excellent for the 26-item scale (α = .93). Using Haberman's (2008) procedure to estimate the proportional reduction in mean squared error based on total scores ($PRMSE_{tot}$), the values obtained for $PRMSE_{tot}$ based on the undergraduate sample were .87 for O-G, .66 for O-SR, .83 for C-SR, .63 for C-G_P and .36 for C-G_A, which are lesser than the internal consistency scores and thus indicate that the inclusion of subscales separate from the total score is warranted (see also Reise *et al.*, 2013).

Convergent validity

For the O-G, C-G_A and C-G_P factors, which reflect traditional conceptions of anxious/obsessive RS, convergent validity was assessed using the EFA sample by comparing correlations between the factors and the VOCI (Thordarson *et al.*, 2004) and BAI (Beck and Steer, 1993), where positive

correlations indicate convergent validity (Hinkin, 1988). The O-G factor correlated moderately strongly with the VOCI ($r = .65$, $p < .001$), as well as with the BAI ($r = .49$, $p < .001$); the C-G_A factor correlated positively though weakly with the VOCI ($r = .28$, $p < .001$) and BAI ($r = .17$, $p < .001$); the C-G_P correlated strongly and positively with the VOCI ($r = .60$, $p < .001$) and BAI ($r = .37$, $p < .001$). For the O-SR and C-SR factors, which most strongly reflect depressotypic RS, convergent validity was assessed with the BDI-II (Beck *et al.*, 1996). The O-SR and C-SR factors correlated moderately strongly with the BDI-II ($r = .41$ and $.49$, $p < .001$). Please refer to Table 5 for correlations between the CORSI and IUS, which was used as an additional measure of concurrent validity.

Divergent validity

Divergent validity was calculated by examining correlations between the CORSI and RSES (Rosenberg, 1965), based on theorized negative relations between RS and self-esteem. Results using the EFA sample showed low to moderate negative correlations between RSES and CORSI total score ($r = -.43$, $p < .001$), O-G factor score ($r = -.42$, $p < .001$), C-G_P factor score ($r = -.23$, $p < .001$), C-G_A factor score ($r = -.16$, $p < .001$), O-SR factor score ($r = -.32$, $p < .001$) and C-SR factor score ($r = -.42$, $p < .001$).

To assess whether the correlations were significantly different between convergent and divergent measures, a series of tests for the difference between dependent correlations were conducted (Lee and Preacher, 2013; Steiger, 1980). Results using the EFA sample demonstrated significant differences in the values between each of the factors for convergent and divergent measures ($z = 5.83$ to 22.58, $p < .001$), suggesting that there are significantly stronger associations between the CORSI and the convergent measures than with the divergent measures.

Known groups validity

Next, *t*-tests were used to compare the scores of individuals with OCD, anxiety disorders and depression, respectively, to those of the undergraduates (Hattie and Cooksey, 1984). In cases when equal variance could not be assumed based on Levene's test, corrected estimates were used.

When comparing individuals with primary OCD to undergraduates, there were significant group differences on CORSI total score [$t (51.79) = 3.92$, $p < .001$, $d = .659$], O-G [$t (51.78) = 3.49$, $p = .001$, $d = .586$], C-G_P [$t (51.26) = 4.89$, $p < .001$, $d = .845$], O-SR [$t (51.57) = 4.02$, $p < .001$, $d = .687$], C-SR [$t (53.06) = 3.11$, $p < .001$, $d = .493$] factors, and a trend for the C-G_A factor [$t (861) = 1.82$, $p = .069$, $d = .259$]. When comparing individuals with primary anxiety disorders with undergraduates, there were significant differences on CORSI total [$t (65.89) = 5.84$, $p < .001$, $d = .824$], O-G [$t (65.16) = 4.82$, $p < .001$, $d = .694$], C-G_P [$t (871) = 4.17$, $p < .001$, $d = .520$], C-G_A [$t (871) = 2.05$, $p = .041$, $d = .276$], O-SR [$t (62.71) = 4.55$, $p < .001$, $d = .707$] and C-SR [$t (65.15) = 5.62$, $p < .001$, $d = .809$] factors. Results also showed group differences between individuals with primary depression and undergraduates on the CORSI total score [$t (840) = 2.01$, $p < .001$, $d = .947$], O-SR [$t (29.14) = 2.97$, $p = .006$, $d = .631$], C-SR [$t (840) = 5.04$, $p < .001$, $d = .867$], O-G [$t (29.11) = 4.20$, $p < .001$, $d = .893$] and C-G_P [$t (840) = 2.94$, $p = .003$, $d = .523$] factors, but was not significant for C-G_A [$t (840) = 1.19$, $p = .235$, $d = .241$].

When examining profiles of scores between clinical groups, there was a significant difference between the OCD and anxiety disorders groups on the C-G_P factor [$t (86.39) = 2.11$, $p = .038$, $d = .409$] only; there was also a trend towards a difference on this factor between the OCD and depression groups [$t (74.66) = 1.89$, $p = .063$, $d = .279$]. There were no statistically significant differences between the anxiety disorder and depression groups on the total or any factor scores. Please refer to Table 4 for clinical groups' descriptive statistics.

Part B. CFA

Subsequent to the EFA and in line with best practices (Martin and Savage-McGlynn, 2013), a CFA with maximum likelihood estimation was conducted with the remaining undergraduate data ($n = 813$) using AMOS 23.0.0.

For the initial, unmodified model, inspection of the fit indices showed χ^2 (289) = 1532.467, $p < .001$, although chi-square is influenced by sample size such that large samples often yield a significant result. For the unmodified initial model, the goodness of fit index (GFI) = .865, comparative fit index (CFI) = .880, Tucker–Lewis index (TLI) = .865 and root mean square error approximation (RMSEA) = .073, which indicated that the unmodified model did not fit the data sufficiently (Bentler, 1990; Bentler and Bonett, 1980; Hooper *et al.*, 2008; Hu and Bentler, 1999; Schreiber *et al.*, 2006; Steiger, 2007; Steiger and Lind, 1980; Tucker and Lewis, 1973).

Given the conceptual overlap in elements of the CORSI items, modification indices of the covariance matrix were considered to identify whether adding theoretically appropriate covariances between error terms improved model fit. Four covariances were deemed appropriate for addition. Following the addition of the four covariances, the model fit chi-square value was improved to χ^2 (285) = 1136.143 (χ^2/d.f. = 3.986), $p < .001$. With the modifications added, the GFI = .897, CFI = .918, TLI = .907 and RMSEA = .061, indicating overall good fit. Please see Fig. 1 for the model estimates.

Discussion

This paper presented the psychometric analyses of a novel measure of RS, the CORSI. The measure assesses major domains of general and social/relational threat-related RS that are seen across disorders. More importantly, the measure assesses overt and covert styles of seeking reassurance. Until now, covert RS has been largely neglected in the literature despite being a maintaining factor in various mental disorders and a potential obstacle to improvement following therapy if left unaddressed. Undergraduate samples were used for the EFA and CFA, and a clinical sample including individuals with OCD, depression and anxiety disorders was obtained for preliminary examination of clinical profiles.

Inspection of fit indices from the EFA, as well as clinical knowledge and theories of RS, were considered in the ultimate selection of the five-factor model. The final 26-item CORSI accounts for a large proportion of variance, with good convergent and divergent validity. The CFA suggests that the model fit well after only minor, theoretically appropriate modifications. This lends confidence to the underlying factor structure and suggests that the CORSI is a robust measure of covert and overt, general threat- and social/relational threat-related RS.

Given that the CORSI was constructed to assess overt and covert, general- and social/relational threat-related in-person RS, the division of the anticipated covert, general threat-related RS factor into two distinct factors was unexpected. Here, the large sample size may have been advantageous as it allowed an active form (C-G_A factor) to be differentiated from a passive form (C-G_P) of covert, general threat-related RS. Upon inspection of the item content, the C-G_A factor identifies individuals who are willing to 'start and stop' an activity and thus gain reassurance by the absence of others' objections to the person *continuing* the activity. An example of this type of RS would be an individual picking up a knife while subtly checking that their partner does not look nervous. This is in accordance with theory of how covert RS may function (Rachman and Hodgson, 1980). Conversely, the C-G_P factor corresponds to a 'wait and see' form of RS, wherein someone gains reassurance of safety (etc.) by observing someone else acting *before* they are willing to do so themselves. An example of this would be an individual who will not eat until after their partner, to feel safe. As the C-G_P was the only factor wherein individuals with primary OCD had a higher score than the depressed or anxious clinical groups, it would be intriguing to examine with future research whether C-G_P RS relates to
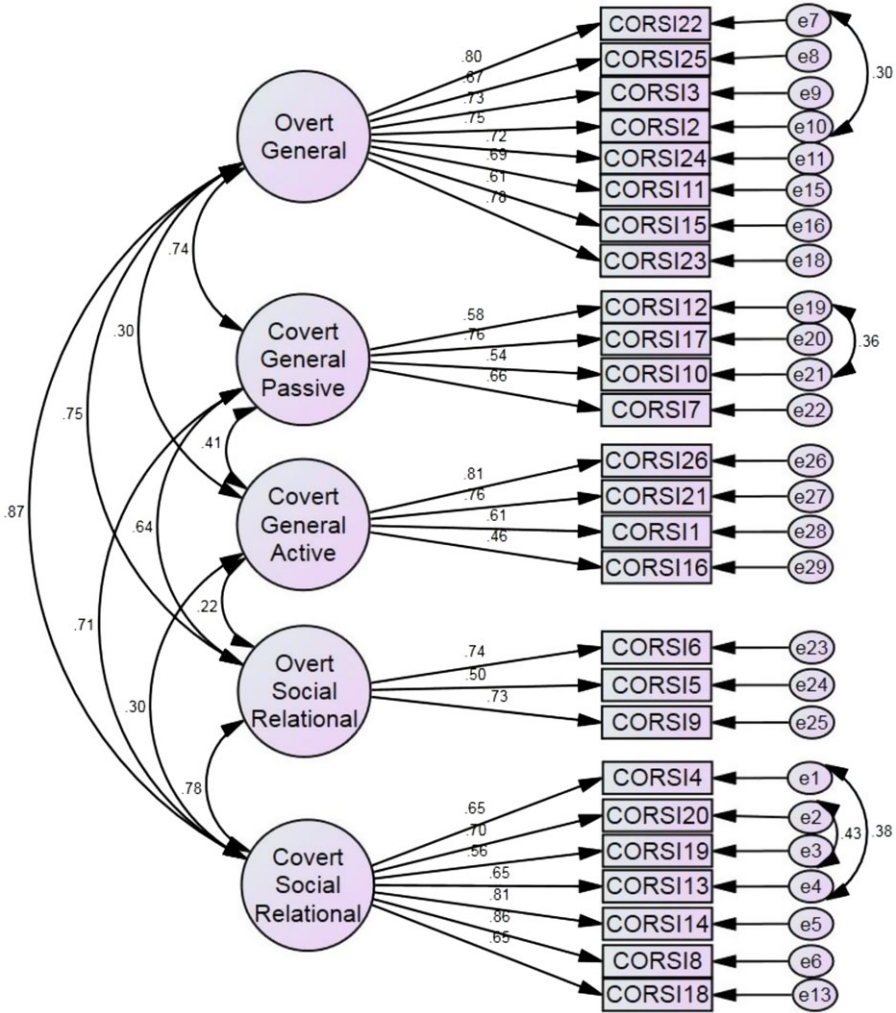
Figure 1. Confirmatory factor analysis model for the five-factor CORSI using the 26 highest-loading items, including four added covariances. Model shown with standardized parameter estimates.

obsessional doubt or slowness more strongly than other facets of OCD, and what factors allow a person to feel reassured when they use C-G$_P$ RS compared with more active styles. Clinically, one may also hypothesize that individuals who engage in significant C-G$_P$ RS may be engaging in other forms of avoidance, more so than clients who are willing to engage with a situation and then seek reassurance (C-G$_A$), which could have a negative effect on engagement with therapy exercises. The present study's specific focus on covert RS behaviour and inclusion of items tapping different aspects of the behaviour probably allowed these distinctions in covert RS to come to light for the first time, and opens an opportunity for future researchers to examine associations between forms of covert RS and treatment processes.

The CORSI successfully differentiated undergraduate from clinical groups, and there were no significant clinical group differences in total or factor scores, except for the C-G$_P$ factor as previously noted. These findings indicate that the CORSI may have utility as a measure of problematic RS across disorders. Examining RS across disorders may allow clinicians and researchers to identify additional similarities in functions and consequences. For instance, low

self-confidence and difficulty making decisions are characteristic symptoms of depression, but would logically relate to problematic RS across disorders. Indeed, it is possible that certain core fears in depression, for instance that one is incompetent/worthless (e.g. Beck, 1976), may only be 'checked' by seeking reassurance from others, thus leading individuals to seek reassurance about both general and relational threats. Furthermore, it is unsurprising that RS about general threats would be pervasive in anxiety disorders, as RS has previously been noted as a common behaviour in disorders including GAD (e.g. American Psychiatric Association, 2013).

Previous research highlighted differences in RS motivations between depression and OCD, but the collective findings now suggest that there is significant overlap in why people seek reassurance across disorders (Cougle *et al*., 2012; Parrish and Radomsky, 2010; Rector *et al*., 2011). Furthermore, these findings suggest that the CORSI may have utility in identifying transdiagnostic aspects of problematic RS, particularly if future research validates its use with larger clinical samples.

Limitations and future directions

In future, the CORSI would benefit from re-test analyses to establish its temporal stability. While the large sample size for the EFA and CFA lend confidence to the interpretation of the CORSI's structure, the clinical sample was insufficiently large to conduct factor analysis. Factors were labelled by the first and second authors to reflect major themes represented by the items within each; however, it is worth noting that factor labels are also subjective (e.g. Field, 2009). The age distribution of the undergraduate versus clinical samples was also significantly different, with the undergraduates being younger and including a higher proportion of females. It would be informative to run another CFA in a larger clinical sample to solidify that the factor structure is replicable, as well as to ensure that the current results are developmentally appropriate for adults varying in age.

Comments about RS behaviour from individuals engaging in problematic RS and their partners were considered throughout the development process, yet direct consultation meetings with people with lived experience were not included in the research design process. It would be highly valuable to engage in such discussions in future as a means of further establishing validity. Doing so could also help elucidate whether the present version of the CORSI would benefit from any item restructuring or addition of any items to further highlight RS in disorders such as panic and specific phobia. Moreover, as the CFA was conducted on a sample that had completed the 30-item version, it would be pertinent to re-run the CFA within novel samples using the 26-item CORSI to gain further confidence of the factor structure's robustness. Further, a potential strength as well as limitation of the current study was the choice to allow co-morbidities in the clinical groups, as it was felt that this best reflects individuals who present to clinical settings and thus maximizes ecological validity. Nonetheless, it would be informative for a future study to replicate the analyses with diagnostically pure samples, to demonstrate whether the factor structure remains stable. As previously noted, the TRSS (Cougle *et al*., 2012), RSS (Rector *et al*., 2011) and ReSQ (Kobori and Salkovskis, 2013) were each published after the current study was underway, and were thus not available for inclusion in validation analyses. An informative next step would therefore be to include these measures in convergent validity analyses of the CORSI's psychometric properties.

Broadly, the CORSI focuses on only in-person RS, although RS may also be sought via methods that do not include in-person contact (e.g. repetitively researching information about a medical condition online; seeking reassurance via websites such as Facebook; e.g. Clerkin *et al*., 2013; Starcevic and Berle, 2013). It may be informative for researchers in future to further examine

whether RS from sources other than in-person contact is similarly transdiagnostic, or whether it is primarily reflected in health-related and social anxieties.

The present findings suggest that RS about social/relational threats is prevalent across disorders. Given that there is some research suggesting that RS in depression is related to attachment anxiety (Evraire *et al.*, 2014; Shaver *et al.*, 2005), which would be logically related to social/relational threat RS, it would be interesting for future research to examine this potential association. Additionally, researchers are increasingly in agreement that intolerance of uncertainty is a cognitive bias evidenced in anxiety disorders, depression and OCD (e.g. Carleton *et al.*, 2012; Dugas *et al.*, 1997; Tolin *et al.*, 2003). The findings from the present study suggest that intolerance of uncertainty and RS are highly related, which suggests that it would be a transdiagnostic mechanism worthy of future study to allow researchers to better understand cognitive underpinnings of RS.

Conclusions

The 26-item CORSI provides an efficient, comprehensive measure of overt and covert, general threat and social/relational threat RS. The CORSI is freely available for public use (see Appendix), and distinguishes individuals with OCD, anxiety disorders or depression from undergraduates. The measure seems effective in identifying problematic RS across disorders, which may in turn increase the CORSI's potential utility in clinical practice, but needs further study in clinical samples. Better identifying RS across disorders could improve our knowledge of the behaviour, and ultimately assist clinicians to better help clients reduce problematic RS behaviour.

References

American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th edn). Washington, DC.

Beck, A. T. (1976). *Cognitive Therapy and the Emotional Disorders*. New York, USA: International Universities Press.

Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: psychometric properties. *Journal of Consulting and Clinical Psychology, 56*, 893–897.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive Therapy of depression*. New York, USA: Guilford Press.

Beck, A. T., & Steer, R. A. (1993). *Beck Anxiety Inventory Manual*. San Antonio, TX, USA: Psychological Corporation.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II*. San Antonio, TX, USA: Psychological Corporation.

Beesdo-Baum, K., Jenjahn, E., Höfler, M., Lueken, U., Becker, E. S., & Hoyer, J. (2012). Avoidance, safety behavior, and reassurance seeking in generalized anxiety disorder. *Depression and Anxiety, 29*, 948–957. https://doi.org/10.1002/da.21955

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*, 238–246. http://dx.doi.org/10.1037/0033-2909.107.2.238

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88*, 588–606. http://dx.doi.org/10.1037/0033-2909.88.3.588

Boelen, P. A., & Reijntjes, A. (2009). Intolerance of uncertainty and social anxiety. *Journal of Anxiety Disorders, 23*, 130–135. https://doi.org/10.1016/j.janxdis.2008.04.007

Brown, T. A., DiNardo, P. A., & Barlow, D. H. (1994). *Anxiety Disorders Interview Schedule for DSM-IV*. New York, NY, USA: Oxford University Press.

Buhr, K., & Dugas, M. J. (2002). The intolerance of uncertainty scale: psychometric properties of the English version. *Behaviour Research and Therapy*, 40, 931–945. https://doi.org/10.1016/S0005-7967(01)00092-4

Carleton, R. N., Mulvogue, M. K., Thibodeau, M. A., McCabe, R. E., Antony, M. M., & Asmundson, G. J. (2012). Increasingly certain about uncertainty: intolerance of uncertainty across anxiety and depression. *Journal of Anxiety Disorders*, 26, 468–479. https://doi.org/10.1016/j.janxdis.2012.01.011

Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, 1, 245–276. https://doi.org/10.1207/s15327906mbr0102_10

Clerkin, E. M., Smith, A. R., & Hames, J. L. (2013). The interpersonal effects of Facebook reassurance seeking. *Journal of Affective Disorders*, 151, 525–530. https://doi.org/10.1016/j.jad.2013.06.038

Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: four recommendations for getting the most from your analysis. *Practical Assessment, Research and Evaluation*, 10, 1–9. http://pareonline.net/getvn.asp?v=10andn=7

Cougle, J. R., Fitch, K. E., Fincham, F. D., Riccardi, C. J., Keough, M. E., & Timpano, K. R. (2012). Excessive reassurance seeking and anxiety pathology: tests of incremental associations and directionality. *Journal of Anxiety Disorders*, 26, 117–125. https://doi.org/10.1016/j.janxdis.2011.10.001

Coyne, J. C. (1976). Toward an interactional description of depression. *Psychiatry*, 39, 28–40. https://doi.org/10.1080/00332747.1976.11023874

Dugas, M. J., Freeston, M. H., & Ladouceur, R. (1997). Intolerance of uncertainty and problem orientation in worry. *Cognitive Therapy and Research*, 21, 593–606.

Evraire, L. E., Ludmer, J. A., & Dozois, D. J. (2014). The influence of priming attachment styles on excessive reassurance seeking and negative feedback seeking in depression. *Journal of Social and Clinical Psychology*, 33, 295–318. https://doi.org/10.1521/jscp.2014.33.4.295

Field, A. (2009). *Discovering Statistics Using SPSS*. Thousand Oaks, CA, USA: Sage Publications.

Freeston, M. H., Rhéaume, J., Letarte, H., Dugas, M. J., & Ladouceur, R. (1994). Why do people worry? *Personality and Individual Differences*, 17, 791–802. https://doi.org/10.1016/0191-8869(94)90048-5

Gorsuch, R. L. (1983). *Factor Analysis* (second edn). Hillsdale, AZ, USA: Lawrence Erlbaum Associates.

Haberman, S. J. (2008). When can subscores have value? *Journal of Educational and Behavioral Statistics*, 33, 204–229. https://doi.org/10.3102/1076998607302636

Halldorsson, B., & Salkovskis, P. M. (2017a). Treatment of obsessive compulsive disorder and excessive reassurance seeking in an older adult: a single case quasi-experimental design. *Behavioural and Cognitive Psychotherapy*, 45, 616–628. https://doi.org/10.1017/S1352465817000376

Halldorsson, B., & Salkovskis, P. M. (2017b). Why do people with OCD and health anxiety seek reassurance excessively? An investigation of differences and similarities in function. *Cognitive Therapy and Research*, 41, 619–631. https://doi.org/10.1007/s10608-016-9826-5

Hattie, J., & Cooksey, R. W. (1984). Procedures for assessing the validities of tests using the 'known-groups' method. *Applied Psychological Measurement*, 8, 295–305. https://doi.org/10.1177/014662168400800306

Heerey, E. A., & Kring, A. M. (2007). Interpersonal consequences of social anxiety. *Journal of Abnormal Psychology*, 116, 125–134. http://doi.org/10.1037/0021-843X.116.1.125

Hayton, J. C., Allen, D. G., & Scarpello, V. (2004). Factor retention decisions in exploratory factor analysis: a tutorial on parallel analysis. *Organizational Research Methods*, 7, 191–205. https://doi.org/10.1177/1094428104263675

Hinkin, T. R. (1988). A brief tutorial on the development of measures for use in survey questionnaires. *Organizational Research Methods*, 1, 104–121.

Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modelling: guidelines for determining model fit. *Electronic Journal of Business Research Methods*, 6, 53–60. http://www.ejbrm.com/issue/download.html?idArticle=183

Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, 30, 179–185. https://doi.org/10.1007/BF02289447

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55. https://doi.org/10.1080/10705519909540118

Hutcheson, G. D., & Sofroniou, N. (1999). *The Multivariate Social Scientist: Introductory Statistics using Generalized Linear Models*. London, UK: Sage Publications.

Joiner, T. E. Jr, Alfano, M. S., & Metalsky, G. I. (1992). When depression breeds contempt: reassurance-seeking, self-esteem, and rejection of depressed college students by their roommates. *Journal of Abnormal Psychology*, 101, 165–173. http://dx.doi.org/10.1037/0021-843X.101.1.165

Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, 20, 141–151. https://doi.org/10.1177/001316446002000116

Kessler, R. C., & Wang, P. S. (2008). The descriptive epidemiology of commonly occurring mental disorders in the United States. *Annual Review of Public Health*, 29, 115–129. https://doi.org/10.1146/annurev.publhealth.29.020907.090847

Kobori, O., & Salkovskis, P. M. (2013). Patterns of reassurance seeking and reassurance-related behaviours in OCD and anxiety disorders. *Behavioural and Cognitive Psychotherapy*, 41, 1–23. https://doi.org/10.1017/S1352465812000665

Kobori, O., Salkovskis, P. M., Read, J., Lounes, N., & Wong, V. (2012). A qualitative study of the investigation of reassurance seeking in obsessive-compulsive disorder. *Journal of Obsessive-Compulsive and Related Disorders*, 1, 25–32. https://doi.org/10.1016/j.jocrd.2011.09.001

Ledesma, R. D., & Valero-Mora, P. (2007). Determining the number of factors to retain in EFA: an easy-to-use computer program for carrying out parallel analysis. *Practical Assessment, Research and Evaluation*, 12, 1–11. http://pareonline.net/getvn.asp?v=12andn=2

Lee, I. A., & Preacher, K. J. (2013, September). Calculation for the test of the difference between two dependent correlations with one variable in common [Computer software].

Martin, C. R., & Savage-McGlynn, E. (2013). A 'good practice' guide for the reporting of design and analysis for psychometric evaluation. *Journal of Reproductive and Infant Psychology*, 31, 449–455. https://doi.org/10.1080/02646838.2013.835036

O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel ana lysis and Velicer's MAP test. *Behaviour Research Methods, Instrumentation, and Computers*, 32, 396–402. https://doi.org/10.3758/BF03200807

Parrish, C. L., & Radomsky, A. S. (2010). Why do people seek reassurance and check repeatedly? An investigation of factors involved in compulsive behaviour in OCD and depression. *Journal of Anxiety Disorders*, 24, 211–222. https://doi.org/10.1016/j.janxdis.2009.10.010

Parrish, C. L., & Radomsky, A. S. (2011). An experimental investigation of factors involved in excessive reassurance seeking: the effects of perceived threat, responsibility and ambiguity on compulsive urges and anxiety. *Journal of Experimental Psychopathology*, 2, 44–62. https://doi.org/10.5127/jep.011110

Pugh, N. E., Hadjistavropoulos, H. D., & Sharpe, D. (2013). The reassurance questionnaire: comparison of the latent structure in university, community, and medical samples. *Psychology, Health & Medicine*, 18, 117–124.

Rachman, S. (2002). A cognitive theory of compulsive checking. *Behaviour and Research Therapy*, 40, 625–639. https://doi.org/10.1016/S0005-7967(01)00028-6

Rachman, S., & Hodgson, R. (1980). *Obsessions and Compulsions*. Hillsdale, NJ, USA: Prentice-Hall.

Radomsky, A. S., Ouimet, A. J., Ashbaugh, A. R., Lavoie, S. L., Parrish, C. L., & O'Connor, K. P. (2006). Psychometric properties of the French and English versions of the Vancouver Obsessional-Compulsive Inventory and the Symmetry Ordering and Arranging Questionnaire. *Cognitive Behaviour Therapy*, 35, 164–173. https://doi.org/10.1080/16506070600827198

Rector, N. A., Kamkar, K., Cassin, S. E., Ayearst, L. E., & Laposa, J. M. (2011). Assessing excessive reassurance seeking in the anxiety disorders. *Journal of Anxiety Disorders*, 25, 911–917. https://doi.org/10.1016/j.janxdis.2011.05.003

Reise, S. P., Bonifay, W. E., & Haviland, M. G. (2013). Scoring and modeling psychological measures in the presence of multidimensionality. *Journal of Personality Assessment*, 95, 129–140. https://doi.org/10.1080/00223891.2012.725437

Rosenberg, M. (1965). *Society and the Adolescent Self-Image*. Princeton, NJ, USA: Princeton University Press.

Salkovskis, P. M. (1985). Obsessional-compulsive problems: a cognitive-behavioural analysis. *Behaviour Research and Therapy*, 23, 571–583. https://doi.org/10.1016/0005-7967(85)90105-6

Salkovskis, P. M. (1999). Understanding and treating obsessive-compulsive disorder. *Behaviour Research and Therapy*, 37, S29–S52. https://doi.org/10.1017/S0141347300011472

Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: a review. *Journal of Educational Research*, 99, 323–338. https://doi.org/10.3200/JOER.99.6.323-338

Shaver, P. R., Schachner, D. A., & Mikulincer, M. (2005). Attachment style, excessive reassurance seeking, relationship processes, and depression. *Personality and Social Psychology Bulletin*, 31, 343–359. https://doi.org/10.1177/0146167204271709

Sinclair, S. J., Blais, M. A., Gansler, D. A., Sandberg, E., Bistis, K., & LoCicero, A. (2010). Psychometric properties of the Rosenberg Self-Esteem Scale: overall and across demographic groups living within the United States. *Evaluation & The Health Professions*, 33, 56–80.

Speckens, A. E. M., Spinhoven, P., van Hemert, A. M., & Bolk, J. H. (2000). The Reassurance Questionnaire (RQ): psychometric properties of a self-report questionnaire to assess reassurability. *Psychological Medicine*, 30, 841–847.

Starcevic, V., & Berle, D. (2013). Cyberchondria: towards a better understanding of excessive health-related internet use. *Expert Review of Neurotherapeutics*, 13, 205–213. https://doi.org/10.1586/ern.12.162

Starcevic, V., Berle, D., Brakoulias, V., Sammut, P., Moses, K., Milicevic, D., & Hannan, A. (2012). Interpersonal reassurance seeking in obsessive-compulsive disorder and its relationship with checking compulsions. *Psychiatry Research*, 200, 560–567. https://doi.org/10.1016/j.psychres.2012.06.037

Steiger, J. H. (1980). Tests for comparing elements of a correlation matrix. *Psychological Bulletin*, 87, 245–251. http://dx.doi.org/10.1037/0033-2909.87.2.245

Steiger, J. H. (2007). Understanding the limitations of global fit assessment in structural equation modeling. *Personality and Individual Differences*, 42, 893–898. https://doi.org/10.1016/j.paid.2006.09.017

Steiger, J. H., & Lind, J. C. (1980). *Statistically-Based Tests for the Number of Common Factors*. Paper presented at the Annual Spring Meeting of the Psychometric Society, Iowa City, USA.

Storch, E. A., Roberti, J. W., & Roth, D. A. (2004). Factor structure, concurrent validity, and internal consistency of the Beck Depression Inventory-Second Edition in a sample of college students. *Depression and Anxiety*, *19*, 187–189. https://doi.org/10.1002/da.20002

Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (fifth edn). Needham Height, MA, USA: Allyn & Bacon.

Thordarson, D. S., Radomsky, A. S., Rachman, S., Shafran, R., Sawchuk, C. N., & Hakstian, A. R. (2004). The Vancouver Obsessional Compulsive Inventory (VOCI). *Behaviour Research and Therapy*, *42*, 1289–1314. https://doi.org/10.1016/j.brat.2003.08.007

Tolin, D. F., Abramowitz, J. S., Brigidi, B. D., & Foa, E. B. (2003). Intolerance of uncertainty in obsessive-compulsive disorder. *Journal of Anxiety Disorders*, *17*, 233–242. https://doi.org/10.1016/S0887-6185(02)00182-2

Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika*, *38*, 1–10. https://doi.org/10.1007/BF02291170

Warwick, H. M. C., & Salkovskis, P. M. (1985). Reassurance. *British Medical Journal*, *290*, 1028.

Appendix A. Covert and Overt Reassurance Seeking Inventory (CORSI)

Please rate each statement by putting a circle around the number that best describes how much the statement is true of you. Please answer every item, without spending too much time on any particular item.

How much is each of the following statements true of you?	Not at all	A little	Some	Much	Very much
1. If other people do not tell me otherwise, I can assume that I've got things under control	0	1	2	3	4
2. I often ask others to tell me if I have made the 'wrong' decision	0	1	2	3	4
3. If I am unable to check something I am anxious about, I will ask others to reassure me that it is OK	0	1	2	3	4
4. I often try to find out if others care about me without asking them directly	0	1	2	3	4
5. I sometimes threaten to end a friendship in order to see if my friends really care about me	0	1	2	3	4
6. I annoy people with repeated requests for reassurance about their feelings for me and this causes problems in my relationships	0	1	2	3	4
7. I always 'test the waters' before engaging in any activity that makes me anxious	0	1	2	3	4
8. I spend an excessive amount of time looking for signs of approval from others	0	1	2	3	4
9. I have often been told that I seem 'insecure' because I constantly seek affirmation or approval from others	0	1	2	3	4
10. If I am unsure about the safety of my food, I will wait until someone else has tried some before I do	0	1	2	3	4
11. If I am really worried about something, it rarely seems good enough to have others reassure me about it only once	0	1	2	3	4
12. If I am uncertain about the cleanliness of an object, I will wait until somebody else touches it before I do	0	1	2	3	4
13. I often make a statement about something that I've done to get information from others about how well I've done it	0	1	2	3	4
14. In order to feel worthwhile, I need other people to continually show me that I am valued through their actions and gestures towards me	0	1	2	3	4
15. If I have checked something repeatedly and still feel unsure, I ask others to reassure me that things are safe	0	1	2	3	4
16. I often try to find out if an object or situation is 'safe' without asking anybody directly	0	1	2	3	4
17. I sometimes check the safety of an object or situation by looking to see how other people react to it	0	1	2	3	4
18. I sometimes make self-derogatory statements with the hope that someone will object to them	0	1	2	3	4

(*Continued*)

(*Continued*)

How much is each of the following statements true of you?	Not at all	A little	Some	Much	Very much
19. In social situations, I try to 'read' other people's body language to determine whether they like me	0	1	2	3	4
20. I look to other people's moods when they are around me to determine whether they like me	0	1	2	3	4
21. If others do not object to my engaging in an activity, then it must be 'safe'	0	1	2	3	4
22. I become so anxious when I am uncertain about something that I need to ask my friends or family for reassurance over and over again	0	1	2	3	4
23. I spend far more time than most people looking to others for signs that things will be OK	0	1	2	3	4
24. I have trouble accepting responsibility for something important without asking for reassurance that everything will be OK	0	1	2	3	4
25. When faced with an important decision, I need to ask others for reassurance before I can make my final choice	0	1	2	3	4
26. When I am anxious about doing something, I often start and if nobody around me warns me to stop, I assume it is OK to continue	0	1	2	3	4

Scoring Information for the Covert and Overt Reassurance Seeking Inventory (CORSI):

To obtain an overall TOTAL score: Sum all responses.

To obtain FACTOR scores, sum each of the responses for the items comprising the five CORSI factors:

1) Overt Social/Relational threat (O-SR): items 5, 6, 9
2) Covert Social/Relational threat (C-SR): items 4, 8, 13, 14, 18, 19, 20
3) Overt General threat (O-G): items 2, 3, 11, 15, 22, 23, 24, 25
4) Covert General threat – Active (C-G_A): items 1, 16, 21, 26
5) Covert General threat – Passive (C-G_P): items 7, 10, 12, 17