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Intrusive thoughts and compulsive behaviors in postpartum women: Psychometric properties of the Parental Thoughts and Behaviors Checklist

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ABSTRACT

Validated measures to assess intrusive thoughts and compulsive behaviors in postpartum women are few. In the present study, we investigated the psychometric properties of such a measure – a self-report version of the Parental Thoughts and Behaviors Checklist (PTBC). Via an online survey platform, 488 women who had given birth during the last year completed the PTBC along with measures of general obsessive-compulsive symptoms, depression, anxiety, parental stress and quality of life. Scores on the PTBC and its subscales showed good to excellent internal consistency, correlated in the expected direction with the other measures in the study, and discriminated between women with and without a history of OCD. Finally, exploratory factor analyses yielded nine thematic factors of intrusive thoughts and compulsive behaviors which largely corresponded to the themes identified by the developers of the interview-based version of the PTBC. This self-report version of the PTBC was found to possess good psychometric properties and to have a factor structure that largely overlapped with the structure of the interview-based version. Further evaluation of this version is needed, but the measure holds promise as a tool that may aid in the assessment of postpartum OCD in primary care and in psychiatric settings.

1. Introduction

Obsessive-compulsive symptoms are common in postpartum women, but measures to comprehensively assess the presence and frequency of such symptoms are greatly lacking. This is problematic since full-scale postpartum obsessive-compulsive disorder (ppOCD) is prevalent in at least 2% to 3% of postpartum women, with some studies showing significantly higher rates (Miller et al., 2013; Russell et al., 2013). When present, symptoms of ppOCD cause interference and vast distress in everyday life with possible negative effects on the parent-infant bonding (Goodman et al., 2016). Further, women in the postpartum period are at increased risk of developing OCD when compared to women in the general population or antenatal women (Fairbrother et al., 2016; Miller et al., 2013; Russell et al., 2013). These factors have led to recent calls for further screening of ppOCD in the postpartum period and development of measures for this purpose (Lawrence et al., 2017).

Postpartum OCD can take on all the usual forms of OCD, with symptoms related to contamination and cleaning, catastrophic thoughts and checking, or symmetry and ordering (Mataix-Cols et al., 2005; Zambaldi et al., 2009). However, some postpartum women develop intrusive thoughts about harm befalling their child, either by accident or by the actions of the mother herself (e.g., intentional harm) (Abramowitz et al., 2003; Fairbrother and Woody, 2008). For someone who develops ppOCD, these thoughts become overwhelmingly distressing, are tied to behavioral or mental compulsions, and can cause significant impairment in everyday life including parenting behaviors (Lawrence et al., 2017).

Over the last 10 years there has been a steady proliferation of guidelines and articles recommending that women in the perinatal period be screened for psychiatric disorders, including OCD (Fairbrother et al., 2015). Still barriers to the detection of ppOCD remain. For many years the focus has been on increasing awareness of and screening for depression in the perinatal period with brief, validated measures designed for this purpose being made available to healthcare professionals (Davis et al., 2013). Less attention has been paid raising awareness about the prevalence of anxiety disorders and OCD in the same period and there is evidence that healthcare

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professionals underestimate their frequency in pregnant and postpartum women (Ford et al., 2016; Noonan et al., 2018). Also, women in the perinatal period with no prior history of OCD may fail to recognize the importance of emerging symptoms of the disorder, and irrespective of OCD history, women may be reluctant to tell healthcare professionals about intrusive thoughts with shameful content, particularly those involving harm to their infant, leaving most sufferers of ppOCD unidentified and untreated (Bayrampour et al., 2017; Challacombe and Wroe, 2013). Improvement in the detection of ppOCD will require a combination of efforts aimed at raising awareness about the prevalence of the disorder and the development and dissemination of relatively brief screening scales of ppOCD.

One scale specifically designed to capture the broad range of symptoms associated with ppOCD is the postpartum version of the Perinatal Obsessive-Compulsive Scale (POCS) (Lord et al., 2011). The POCS consists of a checklist covering 19 obsessions and 14 compulsions as well as a severity scale and an interference scale. The measure has been validated in a mixed group of 162 prenatal and postpartum women, showing promise in discriminating between women with and without postpartum OCD. However, since its preliminary validation in 2011, no follow-up studies have been published, which leaves uncertainties about the psychometric properties of the measure. Another scale that include postpartum-specific OCD symptoms is the 10-item Postpartum Distress Measure (PDM) (Allison et al., 2011), but the scale includes only four items of ppOCD that very broadly assesses checking, fear of harm, illness anxiety, and intrusive thoughts.

A comprehensive measure of ppOCD is the Parental Thoughts and Behaviors Checklist (PTBC), presented first in Abramowitz et al. (2006). In its original version, the PTBC is carried out as a semi-structured interview covering intrusive postpartum-specific thoughts and overt or mental behaviors carried out to manage the distress caused by these thoughts. The PTBC assesses the frequency, severity, resistance to and control over a broad range of obsessions and compulsions, as well as measuring interference. Its structure and format were purposely designed to follow that of the gold standard (and widely disseminated) measure of OCD severity, the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) (Goodman et al., 1989). The Y-BOCS has exhibited sound psychometric properties in both its self-report and interview-based versions; with high levels of convergence between the two versions (Baer et al., 1993; Rosenfeld et al., 1992; Steketee et al., 1996), however, with a somewhat lower degree of convergence in child samples (Storch et al., 2017). The similarity of the PTBC to the Y-BOCS may facilitate its adoption in routine care. The PTBC has been evaluated in three studies and found to possess good psychometric properties (Abramowitz et al., 2006, 2010, 2007).

While comprehensive and informative, there are drawbacks to interview-based measures of OCD in that they are time-consuming and require training to administer properly. Further, symptoms involving sensitive or shameful information are known to be underreported in interviews compared to self-report formats (Fenton et al., 2001; Kaplan et al., 2001). Hence, there is a great need to develop and make available a valid self-report measure of ppOCD. To this end, we modified the PTBC from an interview to a self-report format for potential use as a screen for ppOCD. In the present study, we report on the internal consistency and construct and convergent validity of a Swedish-language, self-report version of the PTBC in a large sample of Swedish postpartum women. The Swedish and English versions of the measure are freely available online (https://osf.io/y3mvf/) and the English version is included as an appendix to this report.

2. Materials and methods

2.1. Study population, recruitment, and procedure

The study included 488 women who had given birth during the past 12 months. The women had a mean age of 28.27 years (SD = 4.53 years; range = 17–45 years) and were recruited through a closed group on the social media platform Facebook. The group was set up as a private, non-commercial initiative to provide helpful information to Swedish women about to give birth. Membership was gained only by contacting the administrator of the group. Private profiles, recently registered accounts, and non-feminine names were all prohibited to be a part of the group. No partners were allowed in the group and only individuals who were carrying a baby was allowed membership. At the time of the study, the group had approximately 9000 members. All data in the present study were collected through an online survey to which an invitation was posted in the Facebook group on the 13th, 25th, and 30th of October 2017. Informed consent was provided by the participant prior to participation. Data collection was undertaken in accordance with the Declaration of Helsinki and ethical approval was obtained by the local ethics committee at the Department of Psychology, Lund University.

2.2. Translation and design of the self-report PTBC

The PTBC has been used as a semi-structured interview as a measure of ppOCD in various formats (Abramowitz et al., 2006, 2010, 2007). Its first section defines and normalizes intrusive thoughts during the postpartum period. Thereafter, the presence of obsessions and related behaviors and their severity are assessed. In the present study, we used the version of the measure that includes 33 intrusive thoughts and 13 related behaviors (Abramowitz et al., 2007). Each thought and behavior are assessed and marked according to yes/no/earlier and then the time, distress, impairment, resistance, and control related to thoughts and behaviors, respectively, are rated which results in a final score of 0–40 (and separate scores for thoughts and behaviors of 0–20), with higher scores indicating more severe symptoms. In collaboration with the original author (J. Abramowitz), and following the recommendations of the World Health Organization, we translated the scale into Swedish and designed it as a stand-alone self-report measure. All sections of the original version were included. The Swedish version of the scale was backtranslated by a bilingual translator not involved in the translation or design of the scale. The backtranslated version was reviewed and approved by professor Abramowitz.

2.3. Background variables

Participants provided demographic and family information and information about complications for the mother or the child during pregnancy or at child birth. The did also provide information about prematurity and type of delivery. Information about mental health problems were collected across symptoms of anxiety, depression, OCD and related disorders, and a miscellaneous category. For each category, participants were asked if they (a) had ever experienced such symptoms, (b) currently experienced such symptoms, (c) had ever received treatment for such symptoms; (d) currently received treatment for such symptoms. Options were “Yes”, “No”, “Not Certain”, and “Not Applicable”. Background data of the participants are presented in Table 1.

2.4. Other self-report measures

2.4.1. Hospital anxiety and depression scale (HADS)

The HADS is a 14-item self-report scale of anxiety and depression (7 items each) were items are scored on a four-point Likert scale ranging from 0 to 3 with higher scores indicating more severe symptomatology (Zigmond and Snaith, 1983). The HADS has exhibited sound psychometric properties in various populations and the internal consistency (as indicated by the Chronbach's alpha) of the scores on the anxiety (α = 0.84) and depression (α = 0.82) subscales were good in the present study.

Table 1
Background data for the 488 participants.

Variable	*N* (%)
Nunber of children	
One	318 (65%)
Two	127 (26%)
Three or more	43 (9%)
Youngest child	
0–2 months	104 (21%)
3–5 months	200 (41%)
6–8 months	133 (27%)
9–11 months	51 (11%)
Education	
Elementary school	30 (6%)
High school	265 (54%)
University	193 (40%)
Household income	
Low	25 (5%)
Lower middle	223 (46%)
Middle	180 (37%)
High	46 (9%)
Very high	14 (3%)
Delivery	
Vaginal	400 (82%)
Caesarian by request	19 (4%)
Caesarian by urgency	69 (14%)
Premature birth, yes	106 (22%)
1–4 weeks	88 (18%)
> 4 weeks	18 (4%)
Complications during pregnancy, yes	221 (45%)
Complications mother, delivery, yes	158 (32%)
Complications child, delivery, yes	87 (18%)
OCD ever, yes	54 (12%)*

Note. OCD = Obsessive-Compulsive Disorder.
* Missing data were present for 20 individuals on this variable.

2.4.2. Obsessive–Compulsive Inventory-Revised (OCI-R)

The OCI-R is an 18-item self-report scale of symptoms of obsessive-compulsive disorder in adults (Foa et al., 2002). Items are rated on a five-point Likert scale ranging from 0 (*Not at all*) to 4 (*Extremely*) with higher scores indicating more severe symptoms. The internal consistency of the scores of the OCI-CV was excellent in the present study ($\alpha = 0.90$).

2.4.3. Parenting Distress Subscale (PDS) of the Nijmegen Parenting Stress Index (NPSI)

The PDS is an 11-item self-report scale on parental stress as measured by stress in relation to the child and to the parental role (De Brock et al., 1992). Items are rated on a 5-point Likert scale ranging from 1 (*Totally agree*) to 5 (*Totally disagree*) with higher scores indicating higher perceived parental stress. The measure was translated to Swedish following the recommendations of the WHO and the scores of the scale exhibited good internal consistency ($\alpha = 0.88$).

2.4.4. Short-form of the 12-Item Health Survey (SF-12)

The SF-12 is a 12-item self-report measure of health-related quality of life across the mental and physical domain (Gandek et al., 1998). The scale employs a mixture of binary (*yes/no*) and Likert-scale items that are transposed to percentage scores which then are combined into a mental and physical quality of life scale (0% to 100%), with higher scores indicating higher perceived quality of life. Traditionally, the SF-12 scores have been transposed using two steps: first to percentage scores and then to t-values. This procedure has been criticized and in the present study we will follow recent recommendations to use the raw percentage scores when performing analyses (Hagell et al., 2017). Further, in the present study only the mental quality of life subscale will be used for analyses.

3. Statistical analyses

All statistical analyses were carried out in R version 3.4.4. in R Studio version 1.1.447 (R Core Team, 2018). To assess internal consistency of the overall PTBC severity scales (obsessions/compulsions/total), we calculated Chronbach's alphas for the scores of the scales. To explore convergent validity, we performed Pearson pairwise correlations between the overall scores of the PTBC and self-reported depression, anxiety, general OCD, parental stress, and quality of life. To further examine aspects of validity, we compared the PTBC scores between women with and without a psychiatric history of OCD using independent samples t-tests. Lastly, we investigated the factor structure of the 45 PTBC checklist items by first computing a tetrachoric correlation matrix and then performing the Kaiser-Meyer-Olkin (KMO) test to explore the suitability of factor analysis and parallel analysis to explore the number of factors to extract. After these steps we performed an exploratory factor analysis, in the R-package *psych*, with principal axis factoring followed by promax rotation.

4. Results

The Chronbach's alphas for the scores of the PTBC obsessions ($\alpha = 0.83$), compulsions ($\alpha = 0.86$), and total ($\alpha = 0.91$) scale were good to excellent. In Table 2, we present the pairwise Pearson correlation matrix for the PTBC scales and the other measures included in the study.

Of the 488 women surveyed, 54 (11.1%) reported a prior history of OCD. This group of women scores on the PTBC (total score: $M = 10.80$, $SD = 6.60$; obsessions: $M = 5.56$, $SD = 3.30$; compulsions: $M = 5.24$, $SD = 4.07$) were higher than those who did not report a history of OCD (total score: $M = 6.36$, $SD = 5.84$; obsessions: $M = 3.73$, $SD = 2.93$; compulsions: $M = 2.63$, $SD = 3.32$). Levene's test indicated unequal variances across groups for the total ($F = 4.36$, $p = .037$) and compulsions scale ($F = 9.25$, $p = .002$) and therefore degrees of freedom were adjusted from 466 to 64 for these scales. The mean differences between the two groups were statistically significant and corresponded to moderate to large effect size differences: total score, $t(64) = 4.71$,

Table 2
Means, standard deviations, and correlation coefficients for the measures included in the study.

Variable	*M*	*SD*	1	2	3	4	5	6	7
1. PTBC Total	7.07	6.18							
2. PTBC Obsessions	4.02	3.06	.92*						
3. PTBC Compulsions	3.05	3.56	.94*	.74*					
4. HADS Depression	5.70	4.02	.42*	.43*	.37*				
5. HADS Anxiety	7.29	4.50	.64*	.64*	.57*	.61*			
6. OCI-R General OCD	11.78	9.84	.63*	.59*	.58*	.44*	.64*		
7. PDS Parental Stress	27.25	9.02	.43*	.46*	.36*	.59*	.57*	.42*	
8. SF12 Quality of Life	57.33	25.04	−0.47*	−0.46*	−0.42*	−0.72*	−0.68*	−0.49*	−0.61*

Note. HADS = Hospital Anxiety and Depression Scale. OCI-R = Obsessive-Compulsive Inventory-Revised. PTBC = Parental Thoughts and Behaviors Checklist. PDS = Parenting Distress Subscale. SF12 = The 12-Item Short Form Health Survey.
* indicates $p < .01$.

Table 3
Factor loadings and proportion of participants that affirmed this symptom for the individual symptom items of the PTBC.

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	%yes
B03. Check baby	0.36	0.23										80
T02. Smothered	0.43											42
T04. SIDS	0.66											75
T01. Stop breathing	0.78											73
T03. Suffocate in sleep	0.80											64
B02. Rationalize		0.41										40
B01. Reassurance (self)		0.43										72
B06. Suppress thoughts		0.48						0.23				70
B07. Avoid situations		0.52										29
B05. Distract (thoughts)		0.72										56
B04. Distract (activities)		0.73										33
T15. Choke			0.21									60
T17. Drowning bath			0.28									17
T28. Contamination baby			0.29									56
T27. Animals(insects)			0.46									26
T26. Cleansers/solvents			0.58									24
T24. Sick unclean surfaces			0.62									17
T25. Sick bodily waste			0.63									7
B09. Social support				0.63								50
B10. Reassurance (others)				0.78								38
B11. Confessing				0.81								53
T05. Hit to hard (burping)					0.40							9
T10. Soft spot mistake					0.40							22
T13. Dropping height					0.52							27
T14. Pick up wrong					0.58	−0.22						31
T12. Dropping hold					0.61							54
T22. Other take infant						0.22						39
T16. Animal attack						0.37						27
T19. Parent hurt						0.51						67
T11. Accident death						0.61						50
T18. Car accident						0.73						50
T31. Thoughts breastfeed							0.60					1
T29. Thoughts genitals							0.63					4
T32. Sexual thoughts							0.87					3
B08. Avoid baby								0.22			0.52	1
T20. Forget car								0.25				14
T21. Give away								0.51				12
T06. Screaming at/slapping								0.56		0.34		25
T23. Leaving baby								0.62				25
T07. Drown purpose									0.53		0.35	1
T09. Burning									0.60			2
T08. Stabbing									0.68			2
T30. Baby's sexuality										0.40		18
T33. Serious illness										0.53		22
B12. Praying											0.37	10
Explained variance,%	5.0	4.7	4.1	4.0	3.8	3.7	3.7	3.2	2.8	2.2	1.7	

Note. PTBC = Parental Thoughts and Behaviors Checklist. F = factor. T = thought. B = behavior. All factor loadings < 0.20 have been omitted for clarity.

$p < .001$, $d = 0.71$, obsessions score, $t(466) = 4.25$, $p < .001$, $d = 0.62$, and compulsions score, $t(64) = 4.53$, $p < .001$, $d = 0.71$).

The KMO test showed that the data were very well suited for factor analysis (Measure of Sampling Adequacy = 0.83). The parallel analysis recommended an 11-factor solution. The factor loadings for all items in the 11-factor solution are presented in Table 3. The RMSEA index was 0.03, indicating a sound factor solution. Nine- to 13-factor solutions did not improve overall model fit. There were few cross-loadings and no items were removed. The 11 factors explained 38.9% of the variance for the total set of variables, with explained variance for each factor presented at the bottom of Table 3 and the frequency of affirmation for each item on the checklist in the last column. We interpreted the 11 extracted factors as follows: F1 = “Concerns about breathing/suffocation and checking”; F2 = “Rumination”; F3 = “Fear of contamination”; F4 = “Reassurance seeking”; F5 = “Fear of hurting baby accidentally”; F6 = “Fear of external harm to baby”; F7 = “Forbidden sexual thoughts about baby”; F8 = “Abandoning or hurting baby”; F9 = “Aggressive obsessions and avoidance of situations”; F10 = “Miscellaneous obsessions”; F11 = “Miscellaneous compulsions”.

5. Discussion

To the best of our knowledge, this study is one of the largest ever carried out with the purpose to examine the psychometric properties of a measure aimed to capture symptoms of ppOCD in postpartum women. From previous research, it is known that symptoms of ppOCD are common in the postpartum period and our results support this, with some specific intrusive thoughts being experienced by well over half of all women. Importantly, the individual symptom items of the scale factored around nine easily interpreted themes (and two miscellaneous factors). These themes add to the literature and can be employed by health care professionals as guidance in the screening of intrusive thoughts and associated behaviors in postpartum women.

The PTBC scales for obsessions, compulsions, and overall severity showed good to excellent internal consistency. However, even though the experience of intrusive postpartum-specific thoughts was very common in the present sample, the degree to which these thoughts and related behaviors caused distress and interference varied greatly. By investigating the relationships between the PTBC overall severity scale and measures of depression, anxiety, general OCD, QoL, and parental stress, we found that ppOCD was strongly associated with higher rates

of co-occurring mental health problems, especially anxiety and general OCD, as well as lower QoL and higher parental stress. These results stress the need for a thorough and broad assessment of overall mental health in women reporting symptoms of ppOCD. Further, by examining PTBC differences between women with and without a history of OCD, we found moderate to large between-group differences, suggesting that women with a history of OCD need to be carefully assessed for the presence of postpartum-specific obsessions and compulsions. While the self-report scale evaluated in the present study can aid in such assessments, and hopefully lead to an increased detection of women suffering from ppOCD, assessments carried out by mental health professionals with knowledge of OCD, using established interview-based measure like the Y-BOCS, are needed to establish the clinical relevance of symptoms. The inclusion of broader OCD measures (e.g., Y-BOCS) is important because many postpartum women that develop OCD do not experience symptoms specifically related to their child or to parenthood, but rather more general obsessions and compulsions.

The results of the present study should be interpreted in the light of some limitations. First, we examined the validity of a self-report version of the PTBC in a Swedish-language format and our findings may not generalize to other language formats. An English-language version of the scale evaluated here has been made freely available and its validity requires investigation. Second, no items of the PTBC specifically address symptoms of symmetry and ordering, which is a major symptom dimension of OCD (Bloch et al., 2008). Future studies should explore the role of symmetry in symptoms of ppOCD. Third, while the sample size was relatively large for the purposes of a preliminary validation of the self-report version of the PTBC, the study participants represented only a small percentage of the 9000 women of the group where the survey was posted. It is possible that women with a history of (or concerns about) mental health problems were more likely to participate in the survey. Further, the inclusion of participants through a social media platform gives rise to uncertainties about the information provided, not the least information about current and previous history (and treatment) of mental disorders. To examine the sensitivity and specificity of the PTBC in relation to ppOCD, future studies need to include structured diagnostic interviews. Fourth, many items of the PTBC can be interpreted as a description of normal everyday experiences and it is possible that these items were affirmed without the intrusive quality inherent to obsessions highlighted in the first part of the measure. Fifth, in the present study no fathers were included. As the scale is not specifically designed for mothers, with the exception of an individual item related to breastfeeding, future studies should explore the psychometric properties of the scale in postpartum fathers. Finally, in the present study, we performed an exploratory factor analysis only. Future studies need to test the factor structure found in this paper using confirmatory factor analysis in other samples.

In sum, the individual symptom items of the PTBC factored around nine clearly thematic symptom features, with considerable overlap with the themes identified by the developers of the original PTBC. Obsessions and compulsions related to these themes should be screened for and assessed in postpartum women. Given the evidence for the internal consistency and validity of this Swedish language, self-report version of the PTBC, further investigation of its validity and clinical utility are warranted in postpartum women.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.psychres.2019.06.015.

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