

ABSTRACT

Objective: To develop a valid and reliable English language based scale to measure pregnant women's expectations of childbirth. **Background:** During pregnancy most women think about their forthcoming childbirth, and develop expectations of how they think this experience will be. Women with adverse expectations of childbirth have been found to have more negative actual experiences. Measuring expectations is therefore important. Existing measures are limited in their established psychometric properties. **Methods:** Items were generated from semi-structured interviews with 18 pregnant women to explore their expectations of their forthcoming childbirth. Content analysis was used to analyse interview data and scale items were developed using the constructs extracted. A population sample of 148 pregnant women completed the initial 85-item version of the Slade-Pais Expectations of Childbirth Scale (SPECS) and the State Trait Anxiety Inventory. **Results:** Principal components analysis of the SPECS identified six underlying components labelled '*coping and robustness to pain*', '*staff and service responsive to needs*', '*fear*', '*out of control and embarrassed*', '*perceptions of partner's coping*' and '*positive anticipation of birth*'. Items with poor psychometric properties were excluded. A final 50-item version of the SPECS showed acceptable internal reliability and good content and construct validity. **Conclusion:** The SPECS shows promising psychometric robustness for use both a research and clinical tool. It can be used as a total score, as a shortened scale focussed only on expectations of self or as a series of subscales covering all domains.

Keywords: Childbirth, expectations, fear, psychometrics, questionnaire development.

MAIN TEXT (3815 max 4000)

Introduction

Childbirth is an emotionally complex event that can elicit both positive and negative emotions (Fenwick, Hauck, Downie and Butt, 2005). Women's expectations of childbirth are associated with their experience of giving birth (Elvander et al., 2013; Slade, MacPherson, Hume & Maresh, 1993). Personal expectations, relationships with healthcare professionals and discourses of childbirth from other women can influence women's expectations of childbirth and satisfaction with birth experience (Fenwick et al., 2005; Hildingsson, 2015). Where experiences are more negative than expected, women may negatively evaluate labour, and report lower satisfaction with care or compromised mental health particularly in the context of traumatic birth experiences (Hildingsson, 2015; Iles & Pote, 2015).

Supporting women to develop more realistic expectations may positively influence birth experience (Haines, Rubertsson, Pallant & Hildingsson, 2012). Measurement tools focusing on labour and birth and that have been psychometrically validated with a UK population are required. Green et al. (1990) used a questionnaire to investigate childbirth expectations related to pain relief, medical interventions and socio-behavioural aspects. Psychometric properties of this tool were unclear. Waldenström et al. (1996) used their own questionnaire, but there were no details regarding the development. Slade et al. (1993) assessed the expectations of emotional, medical and control aspects of labour using a visual analogue scale. Only information on content validity and internal reliability of this measure was provided.

A key dimension of women's negative expectations of childbirth concerns fear, which has been predominantly researched in Scandinavia. Possibly the most widely used measure is the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ; Wijma, Wijma & Zar, 1998). The questionnaire

consists of two scales, version A measuring fear as a dimension of childbirth expectations, and version B, measuring actual experience. The W-DEQ has both good internal consistency and high split-half reliability. However, items for the pilot scale were generated through accounts of two experts' clinical experience. Instruments developed using only literature reviews and expert opinion may neglect key constructs and interviews with members of the target population should be conducted to ensure the relevance and appropriateness of items (Wackerbarth, Streams and Smith, 2002).

Johnson and Slade (2002) used the English version of the W-DEQ with a sample of pregnant women. Findings indicated that, rather than measuring a single construct of fear, it measured four distinct domains: 'fear', 'lack of positive anticipation' and the degree to which women anticipate 'isolation' and 'riskiness'. Several items did not load when the W-DEQ was factor analysed and some of the translated items from Swedish into English did not appear to be meaningful. Whilst the scale has since been amended, the acceptability of the W-DEQ after translation into English has been questioned (Toohill, Fenwick, Gamble & Creedy, 2014). Furthermore, the nature of stressors are likely to vary between cultures (Alderdice, Lynn & Lobel, 2012), and there may be aspects relating to birth that are more relevant for women in the UK.

Additional measurement tools, such as the Pregnancy- related Anxiety Scale (Huizink, 2002), Prenatal Distress Questionnaire (Yali & lobel. 1999) or the Pregnancy Anxiety Scale (Levin, 1991) assess concerns relating to pregnancy and are not specific to labour and birth. Haines et al. (2011) used a two-item assessment for women's fear and worry in relation to childbirth; however, whilst the scale may be useful in determining an overall level of fear relating to childbirth, it will not provide a comprehensive

assessment of expectations. A questionnaire measuring childbirth expectations, grounded in the language and culture of UK women is required.

Aim

To develop a brief, reliable and valid instrument measuring childbirth expectations of pregnant women in the UK. A three-stage process was used;

Stage 1 - Items relating to childbirth expectations were generated via semi-structured interviews with pregnant women to ensure that items were grounded in and reflective of their experiences.

Stage 2 - This initial version was piloted with a large sample of pregnant women and underlying components were explored. Item analysis enabled refinement and the development of a final version of the scale.

Stage 3 - involved assessment of the internal reliability and construct and concurrent validity of the measure.

Method

Stage One: *Item generation*

Semi-structured interviews were conducted to identify thoughts, feelings and expectations in relation to childbirth. Participants were also asked specifically about concerns regarding childbirth, as a potential clinical use of the questionnaire is to identify pregnant women who are fearful of childbirth. A post-interview sentence completion task, developed by Padesky (1994) was included to elicit cognitions relating to pregnant women's expectations of childbirth. This technique involves the completion of

sentences (e.g., “I am,” “others are,” “the world is,”) to assess beliefs about the self, world and other people in relation to childbirth.

Procedure

A consultant obstetrician or midwife leading the antenatal community or hospital clinic approached all pregnant women over 16 years of age who were due to have a vaginal birth and sufficiently proficient in English to complete an interview. Women were given an information sheet and written consent was obtained. Interviews took place at participants’ homes, lasted approximately forty minutes and were audio recorded. Demographic information was continuously reviewed to ensure that women at all stages of pregnancy, with a range of perinatal histories, ages and social circumstances were included (Arksey & Knight, 1999).

The interview schedule was piloted with a member of the study population to assess suitability for purpose. Following this, a prompt was introduced instructing respondents to focus on ‘expectations’ rather than ‘hopes.’ Pilot data was not analysed.

Participants

Eighteen women completed the semi-structured interview. The mean age of the sample was 31.72 years (range 17 – 39 years). The mean gestation was 28.22 weeks (range 10 – 38 weeks). Seven women (38.9%) were nulliparous. Fifteen women were recruited from midwifery-led community clinics, two from consultant-led clinics and one woman had attended a Birth Afterthoughts service indicating a previous traumatic birth. In addition, three further participants reported having previous difficult births but had not received any formal support.

Ethical approval

Ethical approval was provided by North Sheffield Research Ethics committee.

Qualitative analysis

The data analysis was conducted in parallel with data collection and continued until no new areas emerged (Patton, 2002). Interviews were analysed using content analysis (Krippendorff, 1980), which enables the identification of patterns and meaning in qualitative material. A systematic guide provided a framework for indexing the data and retrieval of content relating to the topic of interest (Arksey & Knight, 1999). Transcripts were read and information relating to expectations, fears and concerns regarding labour and birth were extracted.

Initially, 135 constructs were identified. A sample of transcripts were independently rated by another member of the research team; high inter-rater agreement (87%) suggested that the guide for analysis was clear and robust. After consideration of conceptual overlap 53 constructs were deleted, leaving 82 constructs within five category areas: *expectations of staff, environment, partner, labour and birth*. A member of the research team (PS) validated the categories and indexing procedure.

Development of the initial version of the SPECS.

Participants responded to items according to their feelings over the past month. The 82 pilot items were structured on a five-point Likert-style response scale ranging from “Strongly Agree” to “Strongly Disagree.” Items were balanced as positive or negative in order to minimise acquiescence. Negative items were reversed scored. Higher scores indicated more negative experiences of childbirth.

The draft questionnaire was checked for clarity and ease of completion with a convenience sample of five pregnant women to aid the development of the initial questionnaire. In addition, an expert panel of five professionals (a consultant obstetrician, clinical psychologist, community midwife, research midwife and a governance co-ordinator) assessed the face and content validity of items. This multidisciplinary insight aided conceptual development (Barry, Britten, Barber, Bradley & Stevenson, 1999). Following this, minor modifications were made to the wording of items and instructions.

Stage Two: *Pilot testing the SPECS*

Procedure

Questionnaire booklets were distributed to a consecutive series of 600 pregnant women registered at one hospital site, who were: (i) over the age of 16 years and (ii) between 13- 36 weeks gestation. This time frame was chosen because at 13 weeks gestation the main risk of loss of pregnancy has passed and after 36 weeks some of the sample may have given birth. Questionnaire booklets were distributed via post and contained an information sheet, an initial version of the SPECS, the State Trait Anxiety Inventory (STAI: Spielberger, Gorsuch & Lushene, 1983) and a background questionnaire. Responses were anonymous.

Participants

A total of 151 completed questionnaire booklets were returned. Respondents ($n=3$) with >10% of missing data and were excluded. A sample of 148 remained (25% response rate). The mean age of the sample of respondents was 31.36 years, ranging from 19 – 45 years. Women included in the study ranged from having their first to their seventh child, with 35% ($n= 51$) having previously experienced a miscarriage, 9% ($n= 13$) a termination and 3% ($n= 4$) with previous experience of stillbirth. The mean gestation was 23.38 weeks, ranging from 14 – 31 weeks. Additional demographic details are provided

in Table 1. According to the antenatal booking data of the service in which this research was completed, the pilot stage sample was representative of the population.

Measures

Alongside the initial version of the SPECS participants provided demographic details (gestation, age, occupation, marital status, partner's occupation, education, parity, pregnancy medical history, and ethnicity). Women also reported the frequency (over the past week) at which thoughts or images about childbirth had entered their mind, and whether they had 'welcomed', attempted to avoid, or had neither welcomed nor avoided these thoughts. Women also indicated the nature of emotional valence associated with these thoughts on a 5-point scale ranging from 'extremely pleasant' to 'extremely unpleasant.' These measures were employed in the concurrent validity assessment.

The State Trait Anxiety Inventory (STAI: Spielberger, Gorsuch & Lushene, 1983) was included to assess general anxiety. It consists of two scales; the 'State' scale measures transient and situation specific anxiety, while the 'Trait' scale measures anxiety that is considered a stable personality construct. The STAI has been shown to discriminate between healthy controls and patients with anxiety, indicative of good criterion validity. It has also been shown to be reliable, with median alpha coefficients for state anxiety and trait anxiety to be .92 and .90 respectively. The STAI has been used with pregnant samples (Austin, Tully & Parker, 2007).

Results

Data screening

Items from the SPECS questionnaire were analysed for facility and discrimination (Rust & Golombok, 1989). Items with a mean close to the extreme value of the response scale (1 or 5) or with a small

standard deviation were deleted. If fewer than 5% of responses fell into either the ‘agree’ or ‘disagree’ direction the item was also deleted. As a result 16 items were deleted, leaving 66 items.

Principal components analysis

Principal components analysis (PCA) was conducted on the remaining 66 items as a method of component identification. The Kaiser-Meyer-Olkin statistic suggested that the sample size of 148 was adequate (.63). Inspection of the correlation matrix between the 66 items also suggested that PCA was feasible, as there were a reasonable number of correlations above .3 (Kline, 2000). Bartlett’s test for sphericity indicated that the null hypothesis that the variables were uncorrelated could be confidently rejected ($p < .001$).

The unrotated PCA produced 21 factors with eigenvalues greater than 1.0 (Kaiser-Guttman criterion), accounting for 74.7% of the variance. Cattell (1978) reports that in large matrices the Kaiser-Guttman criterion overestimates the number of factors. Examination of Cattell’s Scree plot (Figure 1) suggested that six components should be extracted, accounting for 42.5% of the variance. An unrotated ‘factor plot’ of the 66 variables revealed a moderate number of cross-loadings, indicating a complex structure. As recommended by Tabachnick and Fidell (2006) only variables with loadings greater than .4 were interpreted. The PCA was repeated with an orthogonal rotation using the varimax method, this resulted in a simple structure where variables load ($>.4$) on to only one component. Table 2 displays factor loadings, communalities and the items that constitute each factor after orthogonal, varimax rotation. The factor matrix was carefully assessed and items cross-loading were included in the factor the item matched conceptually. Following this, 55 items remained, organised into six components.

Interpretation of components

Component One (8 items, 8.33% of the variance) with items such as ‘I will not be able to cope with the pain’ constituted a subscale labelled as *coping and robustness to pain*.

Component Two (12 items, 8.05% of the variance) covered expectations of the staff and hospital environment such as ‘Staff will offer me emotional support’. These items were combined to produce a subscale of *staff and service responsive to needs*.

Component Three (12 items, 7.57% of the variance) related to adverse emotional responses to childbirth such as ‘Labour will be scary’. Items were combined to produce a subscale labelled *fear*.

Component Four (10 items, 6.83% of the variance) related to social persona. Items such ‘I worry I will lose control during labour’ were combined to produce a subscale labelled *out of control and embarrassed*.

Component Five (7 items, 6.33% of the variance) were expectations of the childbirth partner such as ‘My partner will not be able to cope seeing me in pain’. These items were combined to produce a subscale assessing perceptions of *partner’s coping*.

Component Six (6 items, 5.52% of the variance) related to the immediate aftermath of birth with items such as ‘I will feel excited’. This subscale was labelled *positive anticipation of birth*.

1 **Reliability**

2 Cronbach's alpha indicated that internal consistency was high for Component Two (*staff responsive to*
3 *needs*) $\alpha = .86$, Component Four (*out of control and embarrassed*) $\alpha = .81$, and Component Five
4 (*perception of partner's coping*) $\alpha = .77$. Deletion of any item within each component did not provide
5 any meaningful change in alpha.

6
7 Item analysis of Component Three (*fear*) indicated that alpha improved from .85 to .86 when the items
8 'I will be able to have the labour I want' and 'I know all I need to know about labour' were deleted.
9 Therefore these two items were deleted. Deletion of the item 'labour is unknown' would have increased
10 alpha, however this item was retained as the construct of 'uncertainty of labour' was highlighted as
11 important in the content analysis. The item 'I will cry' was deleted from Component Six (*positive*
12 *anticipation of birth*) as it resulted in an increase of alpha from .76 to .77

13
14 The item "I will get the privacy I want" (Component Two) was deleted on the basis of duplication with
15 the item "I will get the amount of privacy I want on the labour ward." The item "labour will be horrible"
16 (Component Five) was deleted as this did not conceptually link to items in the component for *partner's*
17 *coping*.

18
19 Cronbach's alpha for the final 50 item SPECS was .89, indicative of high reliability (Nunnally &
20 Bernstein, 1994).

21

1 ***Final version of the SPECS***

2 The remaining items were reviewed to ensure that the content of the original item pool from the
3 exploratory interviews were represented. All important constructs were still covered indicative of
4 acceptable content validity. The final, 50-item version of the SPECS consisted of 6 subscales: *coping*
5 *and robustness to pain* (8 items), *staff and service responsive to needs* (11 items), *fear* (10 items), *out of*
6 *control and embarrassed* (10 items), *partner's coping* (6 items) and *positive anticipation of birth* (5
7 items). See appendix A1 for the final SPECS and scoring key.

8
9 All six subscales were significantly correlated with the SPECS total score ($p < .001$). Means and
10 standard deviations, and intercorrelations between the SPECS subscales and total SPECS score are
11 displayed in Table 3.

12
13 Construct validity of the SPECS was assessed using other theoretically established measures (Martin &
14 Savage-McGlynn, 2013). It was hypothesized that there would be a positive correlation between the
15 SPECS and the STAI, as negative expectations would have some concordance with anxiety regarding
16 childbirth. Total SPECS score was positively correlated with State anxiety ($r = .43, p < .001$) and Trait
17 anxiety ($r = .38, p < .001$). The *fear* subscale (F3) had the highest correlation with state anxiety ($r = .47,$
18 $p < .001$) (Table 3).

19
20 The *staff responsive to needs* subscale (F2) was not significantly correlated with any of the other
21 subscales. Whilst least conceptually linked to anxiety, it is important that this domain is retained to
22 ensure content validity as this subscale correlated with the SPECS total score.

Moderate correlations between the *coping and robustness to pain, fear and out of control* and *embarrassed* subscales ($.47 < r < .55$) (Table 3) indicate that these 3 subscales could be combined to produce a self-focused version of the SPECS with 28 items.

Concurrent validity

As an assessment of concurrent validity the SPECS was correlated with the assessment of subjective stress. Women who fear childbirth may use avoidance as a means of responding to this (Fenwick, Toohill, Creedy, Smith & Gamble, 2015). The full-scale SPECS score was significantly and positively correlated with the frequency of thoughts and images of childbirth ($r = .33, p < .001$). There was a significant difference between the extent to which thoughts of childbirth were perceived as unpleasant and full-scale SPECS score ($F_{(4,80)} = 6.65, p < .001$), with women reporting that thoughts of childbirth were extremely unpleasant reporting significantly higher SPECS scores (Table 4). Women who responded to their thoughts of childbirth by attempting to avoid them reported significantly more negative expectations of childbirth in comparison to those that welcomed them, or neither welcomed nor avoided them ($F_{(2,82)} = 7.32, p < .001$) (Table 4).

Discussion

The SPECS appears to be an internally reliable scale that can be used to understand the range of expectations that women have regarding childbirth. Items were generated with members of the target population thereby ensuring that the resulting scale was grounded purely in the experience of the women themselves. This contrasts with the main existing measure (Wijma, Wijma & Zar, 1998), which was generated from interviews with two experts and may therefore hold limited content validity (Wackerbarth et al., 2002). The broad, exploratory approach undertaken enabled the production of a

comprehensive measurement tool including a range of dimensions relevant to women's expectations of childbirth which clearly includes but is not limited to, fearful expectations.

The SPECS was subjected to principal components analysis and six dimensions were identified; *'coping and robustness to pain'*, *'staff and service responsive to needs'*, *'fear'*, *'out of control and embarrassed'*, *'perceptions of partner's coping'* and *'positive anticipation of birth'*. Therefore the content of expectations of childbirth in this sample were not just positive or negative (unifactorial) but related to specific constructs, one of which was 'fear'.

The dimensions of the SPECS reflect key content areas that have been highlighted in the childbirth expectations literature: pain (Lally et al., 2008), control (Goodman et al., 2004; Slade et al., 1993), support from healthcare staff and partner (Hauck et al., 2007), fear (Wijma et al., 1998) and positive anticipations of birth (Fenwick et al., 2005). The content of each dimension in the SPECS was not pre-determined, and instead represent the outcome of exploratory analysis grounded in women's thoughts and feelings about giving birth.

The SPECS appears to have promising psychometric properties and good internal reliability. A modest, positive correlation with both state and trait anxiety are indicative of construct validity. Concurrent validity is indicated by differences in expectations between groups reporting experience of negative thoughts about birth. The SPECS was developed with an English-speaking sample; and psychometrically investigated with women across the second and third trimesters (52.1% and 47.9% respectively).

Limitations

The psychometric properties of the SPECS were investigated in line with current guidance (Martin, & Savage-McGlynn, 2013). It is noted that the response rate of 25% was relatively low compared to the 35% which Johnson and Slade (2002) received in a similar population.

Further research

Future research should involve testing the SPECS with women specifically by parity and in the latter stages of pregnancy, to establish stability of the factor structure over time (Alderdice et al., 2015). The test-retest reliability of the SPECS should also be assessed. Further research should also focus on establishing normative values to determine cut-off scores for clinical concern and determining if even briefer versions maintain psychometric robustness.

Clinical Implications

The SPECS captures the range of childbirth expectations but specific subscales may be utilised in order to assess specific elements of women's expectations. For example the SPECS includes a single measure of fear that could be used independently (10 items). Three subscales; '*coping and robustness to pain*', '*fear*' and '*out of control and embarrassed*' could be combined to produce a briefer (28-item) '*expectations of self*' scale. Further development could inform use of these items as a screening tool to identify women who have negative expectations of childbirth. Low levels of support from partner and staff regarding childbirth are particularly associated with the development of post-traumatic stress symptoms (Czarnocka & Slade, 2000). The *partner* and *staff* subscales could therefore be used in further research to establish clinical utility. Therefore, whilst the total number of items in this scale may be considered to be lengthy, there is scope to utilise specific subscales for use in clinical contexts. The

1 brevity of the specific subscales in the SPECS (e.g., fear) in comparison to existing measures is a
2 particular advantage of this tool.

3

4 **Conclusion**

5 A tool for measuring general expectations of childbirth and specific sub-elements was developed with a
6 demographically representative sample of pregnant women. Promising psychometric properties indicate
7 potential robustness for both research and clinical use. A briefer 28-item version focusing purely on the
8 self is also available.

9

References

- Alderdice, F., Ayers, S., Darwin, Z., Green, J., Jomeen, J., Kenyon, S., Martin, C. R., Morrell, J., Newham, J. J., Redshaw, M., Savage-McGlynn, E., & Walsh, J. (2013). Measuring psychological health in the perinatal period: workshop consensus statement, 19 March 2013. *Journal of Reproductive and Infant Psychology*, 31(5), 4310-438. doi: 10.1080/02646838.2013.835039
- Alderdice, F., Lynn, F., & Lobel, M. (2012). A review and psychometric evaluation of pregnancy-specific stress measures. *Journal of Psychosomatic Obstetrics and Gynecology*, 33(2): 62-77.
- Arksey, H., & Knight, P. (1999). *Interviewing for social scientists*. London: Sage.
- Austin, M.-P., Tully, L., & Parker, G. (2007). Examining the relationship between antenatal anxiety and postnatal depression. *Journal of Affective Disorders*, 101(1-3), 169-174. doi: 10.1016/j.jad.2006.11.015
- Barry, C. A., Britten, N., Barber, N., Bradley, C., & Stevenson, F. (1999). Using reflexivity to optimize teamwork in qualitative research. *Qualitative Health Research*, 9(1), 26-44. doi: 10.1177/104973299129121677
- Cattell, R. B. (1978). *The Scientific Use of Factor Analysis in Behavioural and Life Sciences*. New York: Plenum Press.
- Czarnocka, J., & Slade, P. (2000). Prevalence and predictors of post-traumatic stress symptoms following childbirth. *British Journal of Clinical Psychology*, 39, 35-51. doi: 10.1348/014466500163095
- Elvander, C., Cnattingius, S., & Kjerulff, K. H. (2013). Birth Experience in Women with Low, Intermediate or High Levels of Fear: Findings from the First Baby Study. *Birth-Issues in Perinatal Care*, 40(4), 289-296. doi: 10.1111/birt.12065

- 1 Fenwick, J., Hauck, Y., Downie, J., & Butt, J. (2005). The childbirth expectations of a self-selected
2 cohort of Western Australian women. *Midwifery*, 21(1), 23-35. doi: 10.1016/j.midw.2004.07.001
- 3 Fenwick, J., Toohill, J., Creedy, D. K., Smith, J., & Gamble, J. (2015). Sources, responses and
4 moderators of childbirth fear in Australian women: A qualitative investigation. *Midwifery*, 31(1),
5 239- 246.
- 6 Goodman, P., Mackey, M. C., & Tavakoli, A. S. (2004). Factors related to childbirth satisfaction.
7 *Journal of Advanced Nursing*, 46(2), 212-219. doi: 10.1111/j.1365-2648.2003.02981.x
- 8 Green, J. M., Coupland, V. A., & Kitzinger, J. V. (1990). Expectations, experiences and psychological
9 outcomes of childbirth- A prospective study of 825 women. *Birth-Issues in Perinatal Care*, 17(1),
10 15-24. doi: 10.1111/j.1523-536X.1990.tb00004.x
- 11 Haines, H., Pallant, J. F., Karlström, A., & Hildingsson, I. (2011). Cross-cultural comparison of levels of
12 childbirth-related fear in an Australian and Swedish sample. *Midwifery*, 27(4), 560-567. doi:
13 <http://dx.doi.org/10.1016/j.midw.2010.05.004>
- 14 Haines, H. M., Rubertsson, C., Pallant, J. F., & Hildingsson, I. (2012). The influence of women's fear,
15 attitudes and beliefs of childbirth on mode and experience of birth. *BMC pregnancy and childbirth*,
16 12. doi: 10.1186/1471-2393-12-55
- 17 Hauck, Y., Fenwick, J., Downie, J., & Butt, J. (2007). The influence of childbirth expectations on
18 Western Australian women's perceptions of their birth experience. *Midwifery*, 23(3), 235-247.
19 doi: 10.1016/j.midw.2006.02.002
- 20 Hildingsson, I. (2015). Women's birth expectations, are they fulfilled? Findings from a longitudinal
21 Swedish cohort study. *Women and Birth*. Online early view. doi: 10.1016/j.wombi.2015.01.011
- 22 Huizink, A. C., de Medina, P. G. R., Mulder, E. J. H., Visser, G. H. A., & Buitelaar, J. K. (2002).
23 Psychological measures of prenatal stress as predictors of infant temperament. *Journal of the*

- 1 *American Academy of Child and Adolescent Psychiatry*, 41(9), 1078-1085. doi:
2 10.1097/01.chi.0000020276.43550.4b
- 3 Krippendorff, K. (1980). *Content analysis: An introduction to its methodology*. London: Sage.
- 4 Iles, J., & Pote, H. (2015). Postnatal posttraumatic stress: A grounded theory model of first-time
5 mothers' experiences. *Journal of Reproductive and Infant Psychology*, 33(3), 238-255. doi:
6 10.1080/02646838.2015.1030732
- 7 Johnson, R., & Slade, P. (2002). Does fear of childbirth during pregnancy predict emergency caesarean
8 section? *Bjog-an International Journal of Obstetrics and Gynaecology*, 109(11), 1213-1221. doi:
9 10.1016/s1470-0328(02)01951-1
- 10 Lally, J., Murtagh, M., Macphail, S., & Thomson, R. (2008). More in hope than expectation: Women's
11 experience and expectations of pain relief in labour: a review. *BMC Medicine*, 6:7. doi:
12 10.1186/1741-7015-6-7
- 13 Lazarus, R. S. (1982). Thoughts on the relations between emotion and cognition. *American*
14 *Psychologist*, 37(9), 1019-1024. doi: 10.1037/0003-066x.37.9.1019
- 15 Levin, J. S. (1991). The factor structure of the Pregnancy Anxiety Scale. *Journal of Health and Social*
16 *Behaviour*, 32(4), 368- 381.
- 17 Martin, C., Savage-McGlynn, E. (2013). A 'good practice' guide for the reporting of design and analysis
18 for psychometric evaluation. *Journal of Reproductive and Infant Psychology*, 31(5), 449- 455.
- 19 Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric Theory* (3rd ed.). New York: McGraw-Hill.
- 20 Padesky, C. A. (1994). Schema change processes in cognitive therapy. *Clinical Psychology &*
21 *Psychotherapy*, 1(5), 267-278.
- 22 Patton, M. Q. (2002). *Qualitative evaluation and research methods*. Thousand Oaks, CA: Sage.
- 23 Rust, J., & Golombok, S. (1989). *Modern Psychometrics*. London: Routledge and Kegan Paul.

- 1 Slade, P., MacPherson, S. A., Hume, A., & Maresh, M. (1993). Expectations, experiences and
2 satisfaction with labour. *British Journal of Clinical Psychology*, 32(4), 469 - 483.
- 3 Speilberger, C. D., Gorsuch, R. L., & Lushene, R. E. (1983). *Manual for the Stait-Trait Anxiety*
4 *Inventory*. Palo Alto, California: Consulting Psychologists Press.
- 5 Tabachnick, B. G., & Fidell, L. S. (2006). *Using Multivariate Statistics*. Boston: Pearson Education.
- 6 Toohill, J., Fenwick, J., Gamble, J., & Creedy, D. K. (2014). Prevalence of childbirth fear in an
7 Australian sample of pregnant women. *Bmc Pregnancy and Childbirth*, 14. doi: 10.1186/1471-
8 2393-14-275
- 9 Wackerbarth, S. B., Streams, M. E., & Smith, M. K. (2002). Capturing the insights of family caregivers:
10 Survey item generation with a coupled interview/focus group process. *Qualitative Health Research*,
11 12(8), 1141-1154. doi: 10.1177/104973202236582
- 12 Waldenström, U., Borg, I. M., Olsson, B., Skold, M., & Wall, S. (1996). The childbirth experience: A
13 study of 295 new mothers. *Birth-Issues in Perinatal Care*, 23(3), 144-153. doi: 10.1111/j.1523-
14 536X.1996.tb00475.x
- 15 Wijma, K., Wijma, B., & Zar, M. (1998). Psychometric aspects of the W-DEQ; a new questionnaire for
16 the measurement of fear of childbirth. *Journal of Psychosomatic Obstetrics and Gynecology*, 19(2),
17 84-97. doi: 10.3109/01674829809048501
- 18 Yali, A. M., & Lobel, M. (2002). Stress-resistance resources and coping in pregnancu. *Anxiety, Stress*
19 *and Coping*, 15, 289- 309.

APPENDIX 1. The Slade-Pais Expectations of Childbirth Scale (SPECS) final version

We know that pregnant women have different expectations of childbirth. Here is a list of statements describing feelings and expectations about childbirth that you may or may not have.

Instructions

- Please try and be as honest as you can in responding to each statement
- Try not to think about it too much as we are interested in your first answer
- Please read each statement carefully and circle the number that best describes how much you have agreed with it over the last month.

Please answer **how you expect** your labour and birth will be, rather than how you hope it will be.

Item	Factor
The following questions are about your expectations of staff on the labour ward when you are in labour	
1. I trust that staff will make the right decision for me	2
2. I expect there will not be enough staff on duty*	2
3. Staff will help me to relax	2
4. Staff will offer me emotional support	2
5. Staff will leave me on my own*	2
6. Staff will not respect my wishes*	2
7. Staff will be interested in me	2
8. Staff will not offer me adequate pain relief*	2
The following questions ask about your expectations of the labour ward environment	
1. The labour ward will have space for me	2
2. I will get the amount of privacy I want on the labour ward	2
3. The labour ward will be a relaxing environment	2
The following questions are about your expectations of your birth partner (this can be anyone who will be there with you) during labour	
1. My partner will not be able to cope with seeing me in pain*	5
2. My partner will find childbirth traumatic*	5
3. My partner will feel helpless*	5
4. My partner will panic*	5
5. My partner will know how to help me	5
6. I will find my partner annoying*	5
The following questions ask about your expectations of labour	
1. I worry that labour will be extremely painful*	1
2. I worry about the length of my labour (either too long or too short)	1
3. My body will fail me during labour*	3
4. I will not be able to give birth naturally*	3
5. I will not be able to cope with the pain*	1
6. I will need medication to manage the labour pain	1

7. <i>I will not get the pain relief I want*</i>	1
8. <i>I am emotionally strong enough to cope with labour</i>	1
9. <i>I will be hysterical during labour*</i>	4
10. <i>I will feel extremely anxious when in labour*</i>	1
11. <i>I will be very worried when I am in labour*</i>	3
12. <i>Labour will be scary*</i>	3
13. <i>Labour is unknown*</i>	3
14. <i>Labour will be complicated*</i>	3
15. <i>I worry I will lose control during labour*</i>	4
16. <i>I worry I will embarrass myself*</i>	4
17. <i>I will feel physically exposed during labour*</i>	4
18. <i>I worry I will need emergency surgery*</i>	3
19. <i>I will be worried about the health of my baby*</i>	3
20. <i>I will be too tired to appreciate the birth*</i>	4
21. <i>I will feel calm during labour</i>	1
22. <i>I worry about trauma to my body*</i>	4
23. <i>My body will be hurt during labour*</i>	4

These questions ask about how you expect you will feel at the time you give birth

1. I will feel excited	6
2. <i>I will be scared*</i>	3
3. <i>I will be anxious*</i>	3
4. I will feel like a mother	6
5. <i>I will be out of control*</i>	4
6. I will be elated	6
7. <i>I will embarrass myself*</i>	4
8. I will be overwhelmed with emotion	6
9. <i>I will be an emotional wreck*</i>	4
10. My maternal feelings will not kick in*	6

SCORING KEY. Each item scored on a scale of 1(strongly agree), 2 (agree), 3 (undecided), 4 (disagree), 5 (strongly disagree). *reverse score for these items. Items corresponding to the 28-item short form are shown in *italics*.

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Table 1. Background characteristics of sample at pilot stage

	<i>N</i>	%
Occupation		
Employed	97	65.5
Unemployed	48	32.4
Sick leave	1	0.6
Marital status		
Married	94	63.5
Living with partner	41	27.7
Single	11	7.4
Other	2	1.4
Qualifications		
GCSE	33	22.3
A level	12	8.1
NVQ	29	19.6
Degree	31	20.9
Post-graduate	25	16.9
Other	10	6.8
Partner's occupation		
Employed	124	83.8
Unemployed	14	9.5
Pregnancy history		
Miscarriage	51	34.5
Stillbirth	4	2.7
Termination	13	8.8
Current pregnancy		
Medical Complications	43	29.1
Planned caesarean section	19	12.8
Ethnicity		
White	139	93.9
Asian or Asian British	6	4.1
Black or Black British	3	2.0

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Table 2. Factor Matrix showing factor loadings and communalities (h^2) with orthogonal, varimax rotation

C	Items	Components (C)						h^2
		1	2	3	4	5	6	
1	1. I will not be able to cope with the pain*	.775	-.062	.141	.076	.070	.020	.635
	2. I will need medication to manage the labour pain	.744	-.136	.032	.068	-.115	-.016	.590
	3. I worry that labour will be extremely painful*	.699	-.034	.084	.211	.091	-.091	.558
	4. I will feel calm during labour	.583	.086	.330	.249	.199	.188	.593
	5. I am emotionally strong enough to cope with labour	.578	.117	.231	.142	.180	.100	.464
	6. I will not get the pain relief I want*	.532	.231	.131	.153	-.151	.207	.443
	7. I will feel extremely anxious when I am in labour*	.526	-.001	.513	-.085	.316	-.007	.647
	8. I worry about the length of my labour (either too long or too short)	.477	-.005	.199	.172	.167	-.019	.326
2	9. Staff will help me to relax	.036	.810	.050	-.006	.021	.083	.668
	10. Staff will offer me emotional support	.070	.741	.068	.042	-.008	.097	.571
	11. The ward will have space for me	-.056	.690	-.091	.113	.041	.030	.502
	12. I will get the amount of privacy I want on the ward	-.241	.623	.129	.081	.019	-.049	.473
	13. The ward will be a relaxing environment	-.235	.620	.166	.087	-.034	.077	.483
	14. Staff will not respect my wishes*	.129	.616	-.094	-.028	.061	.016	.410
	15. Staff will be interested in me	-.018	.614	-.035	.132	-.069	.130	.418
	16. Staff will leave me on my own*	-.036	.595	-.185	.218	.140	-.068	.462
	17. Staff will not offer me adequate pain relief*	.253	.589	.131	-.086	.026	.055	.462
	18. I expect that there will not be enough staff on duty*	.107	.557	-.020	-.083	-.010	.000	.329
	19. I trust that staff will make the right decision for me	.004	.476	-.051	-.158	-.014	.257	.320
	20. I will get the privacy I want ¹	-.063	.464	.166	.294	-.226	.046	.387
3	21. Labour will be scary*	.395	-.029	.631	.073	.315	-.021	.660
	22. Labour will be complicated*	.138	.032	.625	.113	.300	.128	.530
	23. I worry I will need emergency surgery*	.055	.040	.599	.118	.111	-.060	.393
	24. I will be anxious when I give birth*	.228	-.050	.590	.033	.129	-.257	.486
	25. I will be scared when I give birth*	.196	-.120	.553	.090	.170	-.290	.480
	26. I will not be able to give birth naturally*	.182	-.031	.534	.247	-.054	.140	.403
	27. Labour is unknown*	-.074	-.071	.525	.179	.084	-.091	.333
	28. I will be very worried when I am in labour*	.418	.054	.504	-.016	.331	.118	.555
	29. I know all I need to know about labour ²	-.152	.107	.495	.088	-.020	-.023	.288
	30. My body will fail me during labour*	.376	.049	.485	.261	-.068	.140	.471
	31. I will be able to have the labour I want ²	.051	.240	.416	.163	-.126	.214	.322
	32. I will be worried about the health of my	.104	.054	.382	.217	.081	-.026	.241

baby*								
4	33. I will be out of control when I give birth*	.033	.122	.084	.695	.115	.013	.520
	34. I worry I will embarrass myself during labour*	.356	.046	.122	.652	.050	-.110	.583
	35. I will embarrass myself when I give birth*	.199	.090	.116	.629	.231	-.145	.532
	36. I will be too tired to appreciate the birth*	.017	.087	.047	.591	.045	.250	.423
	37. I worry I will lose control during labour*	.370	.245	.177	.581	.139	.079	.592
	38. I will be an emotional wreck when I give birth*	.097	-.042	.177	.550	.347	-.041	.467
	39. I worry about trauma to my body*	-.018	-.139	.259	.518	-.109	.175	.397
	40. My body will be hurt during labour*	.182	-.069	.212	.517	-.104	-.012	.360
	41. I will feel physically exposed during labour*	.034	.018	.272	.411	.031	.027	.246
	42. I will be hysterical during labour*	.367	.069	.057	.390	.284	.014	.376
5	43. My partner will panic*	.106	.023	.107	.060	.755	.017	.596
	44. My partner will find childbirth traumatic*	.025	-.106	-.030	.252	.677	.086	.542
	45. My partner will not be able to cope seeing me in pain*	.203	-.087	.092	.022	.671	-.027	.509
	46. I will find my partner annoying*	-.006	.157	.079	-.049	.590	.029	.382
	47. My partner will feel helpless*	.036	-.098	.142	.131	.560	-.023	.363
	48. My partner will know how to help me	.089	.190	.229	-.134	.455	.400	.481
	49. Labour will be horrible* ³	.397	.123	.111	.267	.418	.225	.481
6	50. I will feel excited when I give birth	-.162	.114	.005	.080	.150	.752	.634
	51. I will be overwhelmed with emotion when I give birth	-.016	.017	-.070	-.093	-.018	.716	.526
	52. I will feel like a mother when I give birth	.039	.159	.078	.182	.088	.655	.502
	53. I will be elated when I give birth	.232	-.097	.084	-.109	.313	.629	.576
	54. I will cry when I give birth ²	-.044	.119	-.276	-.039	-.108	.556	.414
	55. My maternal feelings will not kick in when I give birth*	.204	.104	.062	.309	.037	.446	.353
	56. I will be fully aware of everything during labour	.080	.079	.015	.303	-.228	.351	.281
	57. labour will be lovely	.283	.048	.080	.171	.150	.285	.222
	58. I will have the stamina to cope with labour	.309	.041	.073	.201	.115	.106	.167
	59. I will be relieved that the pregnancy is over	-.280	.144	.149	-.077	-.204	.130	.186
	60. I will feel I have cheated if I need pain relief*	-.260	.071	.208	.169	.096	.108	.165
	61. I will get to the hospital in time	-.186	.014	.098	.043	-.030	.142	.067
	62. Staff will assume I know what to do when I am in labour*	-.010	.225	-.356	.051	.047	-.233	.237
	63. I will feel vulnerable during labour*	.111	.092	.329	.191	.006	.224	.216
	64. I worry that I will lose my temper during labour*	.339	.065	-.042	.286	.387	.102	.363
	65. Labour will be very difficult*	.306	.020	.256	-.008	.356	.063	.290

66. I worry my partner will be late for the birth	-.172	.212	.179	.013	.234	.034	.162
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Note. *item reversed. Component labels: 1 coping and robustness to pain, 2 staff responsive to needs, 3 fear, 4 out of control and embarrassed, 5 perception of partner's coping, 6 positive anticipation of birth.¹removed due to duplication, ²removed following reliability analysis, ³removed as not conceptually related to factor.

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Table 3. Descriptive statistics for the SPECS and Intercorrelations between SPECS subscales, full-scale SPECS and STAI subscales

Subscales	<i>M</i>	<i>SD</i>	2.	3.	4.	5.	6.	7.	8.	Trait anxiety
1. Coping and robustness to pain	21.41	5.11	.006	.545** *	.472** *	.305** *	.162	.699** *	.301** *	.280**
2. Staff /service responsive to needs	25.95	6.88		-.066	.082	.067	.191*	.384** *	-.034	-.059
3. Fear	34.44	7.86			.484** *	.361** *	.076	.739** *	.466** *	.380** *
4. Out of control & embarrassed	26.09	6.18				.267**	.167*	.724** *	.265**	.226**
5. Partner's coping	14.90	4.25					.216* *	.564** *	.338** *	.356** *
6. Positive anticipation of birth	9.59	3.47						.398** *	.188*	.252**
7. Total SPECS	130.2 2	20.16							.431** *	.380** *
8. State anxiety										.827** *

2 Note. * $p < .05$; ** $p < .01$; *** $p < .001$

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Table 4. Total SPECS score by how thoughts/images of childbirth were experienced and responded to

		<i>N</i>	<i>M</i>	<i>SD</i>	<i>F</i>
Experience of thoughts/images of childbirth	Extremely pleasant	8	124.75	24.42	6.65***
	Quite pleasant	24	123.00	16.61	
	Neither	34	131.11	18.83	
	Unpleasant	14	147.71	15.35	
	Extremely unpleasant	3	161.67	21.57	
Response to thoughts/images of childbirth	Always welcome	20	126.65	17.21	7.32***
	Neither	44	128.34	19.51	
	Always push away	19	146.37	20.25	

Note. Total *N*= 83; ****p*<.001

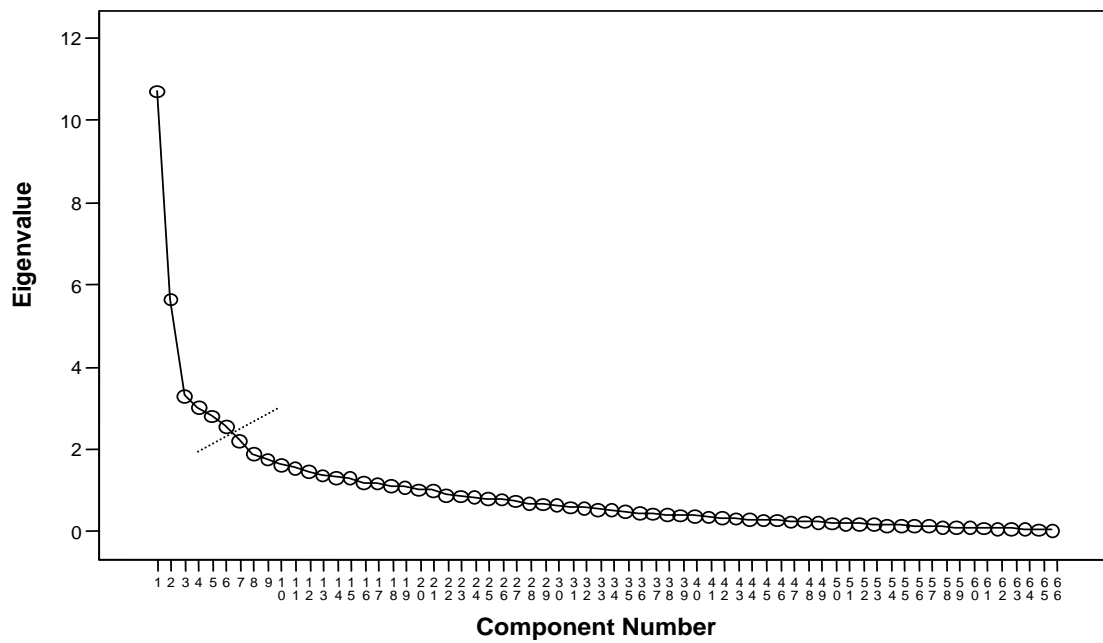


Figure 1. Scree plot from the Principal Components Analysis, showing eigenvalues and six factors extracted.