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Sonya MacVicar[a], Aileen Jordan[b], Hien Vu[c], Hai Ngoc Tran[d], Yvonne Greig[a], Hang Thi Tuyet Nguyen[e], Gail Norris[a], Colin R. Martin[f] and Caroline J. Hollins Martin[a]

[a]School of Health and Social Care, Edinburgh Napier University, Edinburgh, UK; [b]University of Edinburgh, Edinburgh, UK; [c]Head of Social Work department, Phu San Hanoi Hospital, Hanoi, Vietnam; [d]Specialist medicine, Tu Du hospital, Ho Chi Minh, Vietnam; [e]Department of specialist medicine, Tu Du hospital, Ho Chi Minh, Vietnam; [f]Institute for Health and Wellbeing, University of Suffolk, UK

ABSTRACT

Background: The 10-item Birth Satisfaction Scale-Revised (BSS-R) is a quick and easy survey instrument recommended by the International Consortium for Health Outcome Measures as the tool of choice for measuring women's birth satisfaction.

Aim: To translate and validate a Vietnamese-language version of the BSS-R.

Method: A quantitative cross-sectional method was used to gather data post translation and back-translation of a Vietnamese version of the BSS-R (VN-BSS-R). Data collected were psychometrically evaluated using key indices of validity and reliability.

Participants: Vietnamese women who were within one month postpartum of birth ($N = 383$) took part in the study.

Results: Findings illustrate that a two-factor model offered excellent psychometric properties. With the two-factor VN-BSS-R, five items loaded onto a subscale 'Positive birth experiences' and the other five onto a second subscale 'Negative birth experiences'. This two-factor model offered a fit to data (root mean square error of approximation [RMSEA] = 0.07, 90% confidence interval [CI] [0.05, 0.09], root square mean residual [RMSE] = 0.04 and comparative fit index [CFI] = 0.97). Mean scores for the exploratory factor analysis [EFA]-derived 'positive' and 'negative' sub-scales were 17.12 (*SD* 2.34) and 8.40 (*SD* 4.18) respectively.

Conclusion: The translated and validated VN-BSS-R is a psychometrically robust tool for measuring birth satisfaction in Vietnamese postpartum women.

The VN-BSS-R is available for use to measure experiences and perceptions of intrapartum care received by Vietnamese women.

Introduction

Giving birth is a life-altering experience which can profoundly influence holistic outcome measures of childbearing women (Bell & Andersson, 2016). Having a positive birth experience

can raise self-esteem, improve transition to parenthood and create greater mother–infant bonding (Karlstrom et al., 2015). Bohren et al. (2019) highlight that women's experiences of maternity care and how they perceive they were treated are equally as important and valid as the clinical care they receive. Subsequently, in addition to reducing maternal and neonatal mortality and morbidity, there is now an added request for women worldwide to receive Respectful Maternal Care (RMC) (Jolivet et al., 2021). Creating a positive birth experience is important as women may avoid seeking care within a hospital setting if they perceive, or suspect, the care provided as being disrespectful (Shuman et al., 2023). In response, the World Health Organization (WHO) specifies the need for all woman to receive RMC as a strategy to combat maternal mortality rates and poor neonatal outcomes (WHO, 2018). The International Childbirth Initiative (ICI) developed a 12-step guide which outlines what RMC consists of in relation to supportive intrapartum care, comfort and pain relief in labour, and practices which enhance health and wellness (ICI, 2023). This states that care should be evidence based, non-discriminatory and treat every woman and newborn with compassion, respect and dignity. There is a necessity for health providers to use validated tools to assess current maternal provision as a step to drive change. The 10-item Birth Satisfaction Scale-Revised (BSS-R) is a quick and easy survey instrument for measuring women's experiences of childbirth, which can be utilised to audit provision of RMC (Hollins Martin & Martin, 2014).

BSS-R in its founder UK form, has been validated to assess three subscales: (1) quality of care provision (4 items: 3, 5, 6, 10); (2) women's personal attributes (2 items: 4, 8); and (3) stress experienced during labour (4 items: 1, 2, 7, 9). The validated BSS-R has an excellent fit to this three-subscale model in translated versions (Emmens et al., 2023; Grundstrom et al., 2023; Skodova et al., 2019). Additionally, previous scales have found a good fit to a two-factor model (Martin et al., 2018), and comparisons of the three-subscale measurement model and the two-factor two-subscale model of the BSS-R in translated form found no significant differences between the two models (Moreira et al., 2023; Nakić Radoš et al., 2022; Nespoli et al., 2020).

In terms of robustness and ease-of-use, the BSS-R has been selected by the International-Consortium-for-Health-Outcome-Measurement (ICHOM), as the recommended international measure for evaluating women's birth satisfaction (ICHOM, 2016). Since 2015, the BSS-R has been translated and validated for use in more than 65 countries, across diverse healthcare provisions, geographic challenges, resources availability and funding models (Barbosa-Leiker et al., 2015; Jefford et al., 2018; Skvirsky et al., 2020; Tezuka et al., 2023). However, to date there is not a validated BSS-R available in Vietnamese. The aim of this study was to translate and validate a Vietnamese-language version of the BSS-R which is appropriate for use with the local population.

To reach this goal, the study objectives were:

(1) The translation and cultural adaptation of the original UK BSS-R into Vietnamese Birth Satisfaction Scale-Revised (VN-BSS-R).
(2) To determine model fit of the established tri-dimensional BSS-R measurement model applied to the VN-BSS-R.
(3) To report the internal consistency of the VN-BSS-R Quality of Care (QC), Women's Attributes (WA) and Stress Experienced during Childbearing (SE) subscales and the total VN-BSS-R scale.
(4) To investigate the known-groups discriminant validity of the VN-BSS-R.

(5) To etermine the convergent validity of the VN-BSS-R.

(6) To determine the divergent validity of the VN-BSS-R.

Methods and materials

Translation of BSS-R into Vietnamese

Translation of the BSS-R considered the cultural, linguistic and contextual adaptation of the tool. This process of transcultural adaptation involved developing an assessment instrument which would be the equivalent of the original scale to measure birth satisfaction and be culturally and contextually appropriate to Vietnamese society (Arafat et al., 2016). The translation process was performed using a redacted version of the WHO (2012) translation recommendations which include forward translation, back translation, and expert panel review prior to acceptance of a final translated version.

The first step of the forward-backward translation procedure was translating the BSS-R items from English to Vietnamese. The forward translation was undertaken by Vietnamese obstetric practitioners who were fluent in English. This was followed by the back translation into English performed by an independent non-medical translator. The back translation was compared by authors (SM, YG & AJ) as English speakers and midwifery practitioners who have familiarity with the UK version of the BSS-R. This identified queries over the conceptual understanding of question 1. The next step consisted of an expert panel meeting, which included three UK authors, three Vietnamese obstetricians and a service user who was a native Vietnamese speaker fluent in English. The expert panel debated the conceptual, cultural and language accuracy of translation and agreed on 8 out of the 10 questions. Queries were raised in respect of the translation of question 1 ('I came through childbirth virtually unscathed') and question 8 ('I felt out of control during my birth experience'). The translated meaning of these two questions was thoroughly discussed until the expert panel reached consensus on the Vietnamese terminology and collectively agreed alternatives. The concluding step consisted in the comparison of the original and back-translated version of the scale to confirm that no item in the Vietnamese version had changed its original meaning.

Validation of VN-BSS-R: study design and participants

This was a quantitative cross-sectional study conducted in the four maternity facilities in Vietnam. Tu Du is a national hospital in Ho Chi Minh City with an obstetrics and gynaecology department and an average 65,000 births annually. Phu San Hanoi Hospital is the largest obstetric hospital in Hanoi with an average of 40,000 births annually. Gia Lam and Dong Anh are general hospitals with maternity services and are situated in Hanoi. Data collection was concurrent across all four healthcare facilities between May 2023 to July 2023.

The population available were exclusively Vietnamese nationals with the corresponding cultural and contextual expectations of birth satisfaction. Participants were recruited postpartum, in the first month post-birth. Eligibility criteria included adults over the age of

BOX 1: Data collection and eligibility criteria

Hospital	Participant number	Eligibility criteria
Tu Du	180	*Participants*
Phu San	180	● Over 18 years of age.
Gia Lam	20	● Read, write and speak Vietnamese.
Dong Anh	20	*Healthy infant (>36 weeks gestation)*
		● No congenital anomalies.
		● No known adverse health conditions.
		● Did not require neonatal intensive care.

18, who were able to read and speak Vietnamese. Participants were recruited from those who birthed a live, healthy baby as determined by ICD 10 codes, XV11 (WHO, 2016).

Data collection

Women were informed of the study and offered the opportunity to participate via a participant information leaflet. For those who opted to participate, written consent was obtained and the VN-BSS-R was distributed. Completed surveys were returned in sealed envelopes and data were transferred to an electronic spreadsheet. Data collection was concurrent across all the hospitals involved. Data collection per hospital and eligibility criteria is summarised in Box 1.

Measures

The Birth Satisfaction Scale-Revised (BSS-R)

BSS-R (Hollins Martin & Martin, 2014) assesses birth experience using a self-report format and three subscales of Stress Experienced during labour (SE subscale, 4 items), Women's personal Attributes (WA subscale, 2 items) and Quality of Care (QC subscale, 4items). A total score is calculated (range 0–40), with this scale advocated as a 'gold standard' measure of birth experience (International Consortium for Health Outcome Measurement, 2017). The BSS-R can thus be used as a subscaled or total scored instrument, or indeed in both models, depending on the research purpose or clinical application. Numerous translation and validation studies of the BSS-R have been shown to demonstrate the replicability of the tridimensional measurement model of the BSS-R (Grundstrom et al., 2023; Jefford et al., 2018; Romero-Gonzalez et al., 2019).

Statistical analysis

Adopting the approach of previous validation studies of the BSS-R, the survey data are screened for distributional characteristics, which specifically include skew and kurtosis and multivariate normality, and the presence of multivariate outliers (Kline, 2000). Multivariate outliers are identified by calculation of the Mahalonobis distances (Mahalanobis, 1936) and removed.

Confirmatory factor analysis

The established measurement model of the BSS-R, comprising factors defined by the SE, WA and QC items within a correlation model, is then assessed for fit to data using confirmatory factor analysis (CFA) (Brown, 2015). A two-factor model comprising an overarching factor of childbearing experience and uncorrelated SE, WA and QC factors to determine residual factor-specific variance is also evaluated (Martin et al., 2018). A single-factor model was also evaluated. Model fit measures to evaluate CFA models include the root mean square error of approximation (RMSEA) (Steiger & Lind, 1980), the square root mean residual (SRMR) (Hu & Bentler, 1999) and the comparative fit index (CFI) (Bentler, 1990)., The cut-off criteria for a good-fitting model for the RMSEA, SRMR and CFI are ≤ 0.08, ≤0.06 and ≥ 0.90 respectively.

Internal consistency

Internal consistency of the SE and QC subscales and the total VN-BSS-R scale was determined using Cronbach's alpha (Cronbach, 1951), with a conventional acceptability criterion of ≥ 0.70 (Kline, 2000). Comprising two items, the internal consistency of the WA subscale was evaluated using the inter-item correlation with an acceptability range of $r \geq 0.15$ - ≤ 0.50 (Clark & Watson, 1995). McDonalds Omega hierarchical (ωh) and Omega total (ωt) were also used to evaluate the internal consistency of the total scale (Revelle, 2022; Zinbarg et al., 2005).

Known-groups discriminant validity

Known-groups discriminant validity (KGDV) was determined by the evaluation of the VN-BSS-R subscale and total score differences, based upon type of birth (unassisted vaginal birth, emergency Caesarean Section [CS] and elective CS). One-way analysis of variance (ANOVA) was used to determine any statistically significant differences between scores and, in the event of these (significant differences) being observed, post-hoc analysis was undertaken using the Bonferroni test. KGDV was also evaluated focusing upon differences in VN-BSS-R scores as a function of parity (nulliparous/multiparous) and using the independent t-test. These approaches to KGDV evaluation are consistent with previous validation studies of the BSS-R (Ratislavova et al., 2022; Tiwari et al., 2023).

Divergent validity

Following the approach taken by others, divergent validity was assessed by calculation of Pearson's r correlation coefficients between VN-BSS-R subscale/total scores and the age of the participant.

Results

Three-hundred and eighty-three participants took part in the study and provided complete VN-BSS-R data. Seventeen multivariate outliers were identified by reference to their Mahalanobis distances and removed leaving the final dataset for

Table 1. Descriptive and distributional characteristics of the VN-BSS-R.

Item	Item content	Domain*	Mean	SD	Min Max	Skew	Kurtosis	Se
BSS-R 1	I came through childbirth virtually unscathed	SE	3.39	0.72	04	−1.35	2.53	0.04
BSS-R 2	I thought my labour was excessively long	SE	2.28	1.22	04	−0.36	−0.99	0.06
BSS-R 3	The delivery room staff encouraged me to make decisions about how I wanted my birth to progress	QC	3.27	0.66	14	−0.74	1.02	0.03
BSS-R 4	I felt very anxious during my labour and birth	WA	1.30	1.16	04	0.81	−0.28	0.06
BSS-R 5	I felt well supported by staff during my labour and birth	QC	3.48	0.56	14	−0.59	−0.17	0.03
BSS-R 6	The staff communicated well with me during labour	QC	3.48	0.58	14	−0.63	−0.12	0.03
BSS-R 7	I found giving birth a distressing experience	SE	1.22	1.19	04	0.85	−0.26	0.06
BSS-R 8	I felt out of control during my birth experience	WA	1.60	1.22	04	0.43	−0.95	0.06
BSS-R 9	I was not distressed at all during labour	SE	1.99	1.26	04	0.15	−1.16	0.06
BSS-R 10	The delivery room was clean and hygienic	QC	3.51	0.56	14	−0.62	−0.14	0.03
Stress	Subscale total		8.88	2.88	116	0.26	−0.30	0.15
Attributes	Subscale total		2.90	2.02	08	0.56	−0.36	0.10
Quality	Subscale total		13.74	1.91	616	−0.27	−0.76	0.10
Total	Total score		25.52	4.88	1540	0.59	−0.17	0.25

*Domain of Vietnamese BSS-R. SE = Stress experienced during childbearing, WA = Women's attributes, QC = Quality of Care.

Legend: Mean, standard deviation and distributional characteristics of individual V-BSS-R items, subscale totals and the total Vietnamese BSS-R score. SE = standard error.

analysis ($N = 383$). Participants mean age was 20.04 (*SD* 5.05), range 17–44. Gestation duration was 38.81 (*SD* 1.41), range 36–41 weeks. Eight women had complex birth types which could not be unambiguously classified and accurate data on birth type was unavailable on a further eight women, thus these cases were excluded from birth type analysis. One hundred and eighty-four (48%) women had an unassisted vaginal birth, and $n = 118$ (31%) had an elective CS and $n = 81$ had an emergency CS (21%). The majority of women were multiparous, $n = 206$ (54%).

Individual VN-BSS-R items, subscale and total scale distributional characteristics and scores are summarised in Table 1. No evidence of significant skew or kurtosis was observed across items, subscales or the total scale.

Confirmatory factor analysis

CFA models are summarised in Table 2. All models were found to offer a poor fit to data. Modifications indices were investigated for the three-factor measurement model and the two-factor model, and the pattern of findings from scrutiny of these

Table 2. Confirmatory factor analysis of the VN-BSS-R.

Model	χ^2 (DF)	*p*	RMSEA	SRMR	CFI
1. Single factor	521.83 (35)	<0.001	0. 173	0.191	0.642
2. Three-factor	207.145 (32)	<0.001	0.126	0.12	0.871
3. Bifactor	171.625 (26)	<0.001	0.123	0.121	0.893

Legend: Confirmatory factor analysis of the Vietnamese BSS-R.

Table 3. Exploratory factor analysis of the VN-BSS-R.

Item	Item content	Original domain*	Vietnam domain	Factor 1	Factor 2
BSS-R 1	I came through childbirth virtually unscathed	SE	Positive	**0.52**	0.27
BSS-R 2	I thought my labour was excessively long	SE	Negative	0.06	**0.56**
BSS-R 3	The delivery room staff encouraged me to make decisions about how I wanted my birth to progress	QC	Positive	**0.63**	0.01
BSS-R 4	I felt very anxious during my labour and birth	WA	Negative	−0.09	**0.67**
BSS-R 5	I felt well supported by staff during my labour and birth	QC	Positive	**0.92**	−0.03
BSS-R 6	The staff communicated well with me during labour	QC	Positive	**0.91**	−0.05
BSS-R 7	I found giving birth a distressing experience	SE	Negative	−0.04	**0.78**
BSS-R 8	I felt out of control during my birth experience	WA	Negative	0.03	**0.68**
BSS-R 9	I was not distressed at all during labour	SE	Negative	0.20	**0.35**
BSS-R 10	The delivery room was clean and hygienic	QC	Positive	**0.52**	0.09

*Exploratory factor analysis of the Vietnamese BSS-R. Original tri-dimensional model domains are indicated as well as Vietnam-specific domains from the exploratory factor analysis (EFA). Significant item-factor loadings are indicated in bold.

suggested fundamental model misspecification to data. Following review of these findings––specifically, the poor fit of all CFA models–it was decided to investigate the data structure using exploratory factor analysis (EFA) precluding an apriori model specification.

Posteriori exploratory factor analysis

A posteriori EFA was undertaken to determine if the Vietnamese BSS-R may have a definable but, atypical, factor structure. Initial appraisal of the dataset indicated suitability for EFA (Bartlett's test of sphericity, χ^2 $(_{df} = 45) = 1384.87$, $p < .001$, and the Kaiser-Meyer-Olkin test, MSA = 0.77). A parallel analysis (Horn, 1965; Revelle, 2022) indicated two factors, and thus a two-factor model was specified using maximum-likelihood estimation and oblimin rotation (Kline, 1994, 2000). Two clearly differentiated factors emerged (Table 3), with no cross-loading or non-loading items, which explained 47% of the variance, χ^2 $(_{df} = 26) = 70.83$, $p < .001$. The correlation between the two factors was relatively low, negative though statistically significant ($r = −0.11$, $p = 0.03$). The two-factor model offered a good fit to data, RMSEA = 0.07, 90% CI [0.05, 0.09], RSMR = 0.04 and CFI = 0.97. Factor one comprised five items indicative of the positive aspects of the birth experience and the five-factor two items comprised the negative items associated with birth experience. Mean scores for the EFA-derived 'positive' and 'negative' subscales were 17.12 (*SD* 2.34) and 8.40 (*SD* 4.18) respectively.

Internal consistency

Cronbach's alpha of the SE, WA and QC subscales and the *VN-BSS-R* total score were 0.52, 0.61, 0.82 and 0.68 respectively. Pearson's *r* correlation of the two WA items was 0.44. Cronbach's alpha of the EFA-derived 'positive birth experiences' and 'negative birth experiences' subscales were 0.81 and 0.73. The omega findings for ωh and *ωt* were 0.16 and 0.79 respectively.

Table 4. Known-groups discriminant validity: Type of birth.

BSS-R Scale	Vaginal birth (N = 184)	Elective Caesarean (N = 118)	Emergency Caesarean (N = 81)	F	p	ω2	95% CI	Effect size*
SE	8.48 (2.69)a	10.03 (2.99)a,b	8.11 (2.66)b	15.12	<0.001	0.07	0.03–0.12	Medium
WA	2.64 (1.87)a	3.53 (2.34)a,b	2.59 (1.65)b	8.38	<0.001	0.04	0.01–0.08	Small
QC	13.93 (1.72)	13.43 (2.11)	13.74 (1.98)	2.45	0.09	0.01	0.00–0.03	Small
Total score	25.05 (4.66)a	26.99 (5.47)a,b	24.44 (3.95)b	8.48	<0.001	0.04	0.01–0.08	Small
EFA scale 1	17.38 (2.10)	16.76 (2.66)	17.06 (2.30)	2.57	0.08	0.01	0.00–0.03	Small
EFA scale 2	7.67 (3.79)a	10.23 (4.63)a,b	7.38 (3.45)b	17.96	<0.001	0.08	0.03–0.14	Medium

Note: a,b,c, indicates statistically significant (p < 0.05) Bonferroni-adjusted differences between group pairs. Effect size criteria based on Field (2013).

Legend: Comparison of Vietnamese BSS-R total and subscale scores and the EFA-derived positive (1) and negative (2) birth experience subscales differentiated by type of birth. Standard deviations are in parentheses, degrees of freedom = 2.380.

Table 5. Known-groups discriminant validity: Parity.

BSS-R Scale	Primiparous (N = 177)	Multiparous (N = 206)	95% CI	t	p	Hedge's g	Hedge's g 95% CI	Effect size*
SE	8.11 (2.67)	9.55 (2.90)	0.87–2.00	5.03	<0.001	0.51	0.31–0.72	Medium
WA	2.49 (1.83)	3.26 (2.11)	0.38–1.18	3.81	<0.001	0.39	0.19–0.59	Small
QC	13.84 (1.89)	13.65 (1.93)	−0.20–0.57	0.95	0.34	0.10	−0.10–0.30	Negligible
Total score	24.43 (4.41)	26.46 (5.08)	1.07–3.00	4.14	<0.001	0.42	0.22–0.63	Small
EFA scale 1	17.17 (2.33)	17.08 (2.35)	−0.38–0.56	0.36	0.72	0.04	−0.16–0.24	Negligible
EFA scale 2	7.26 (3.73)	9.38 (4.30)	1.30–2.93	5.11	<0.001	0.52	0.32–0.73	Medium

Effect size criteria based on Cohen (1992).

Legend: Comparison of Vietnamese BSS-R total and subscale scores and the EFA-derived positive (1) and negative (2) birth experience subscales differentiated by parity. Standard deviations are in parentheses, degrees of freedom = 381.

Known-groups discriminant validity

Group differences as a function of type of birth are shown in Table 4. Highly statistically significant differences were observed between SE, WA, the EFA-derived 'negative birth experience' subscales and the total VN-BSS-R score. Effect sizes were observed to be small for the WA subscale and VN-BSS-R total score, and medium for the SE and EFA-derived 'negative birth experience' subscale. Post-hoc Bonferroni testing revealed that while there were no significant differences between vaginal birth and emergency CS, elective CS scores on these subscales and the VN-BSS-R total score were significantly higher than for those women who had an unassisted vaginal birth or an emergency CS (p < .05). KGDV analysis also revealed highly statistically significant differences as a function of parity on SE, WA, VN-BSS-R total score and EFA-derived 'negative birth experience' sub-scale, with multiparous women reporting better birth satisfaction scores (Table 5).

Divergent validity

No statistically significant correlation was observed between any of the VN-BSS-R subscale scores, including those derived from the EFA posteriori. Pearson's r correlations between participant age and VN-BSS-R subscales and the total score are shown in Table 6.

Table 6. Divergent validity: correlations between VN-BSS-R SUB-scale scores and Age.

	Stress	Attributes	Quality	Total score	EFA Positive	EFA Negative	Age
Stress	1	0.60***	0.15**	0.89***	0.27***	0.89***	−0.01
Attributes		1	−0.10*	0.73***	−0.05	0.87***	0.06
Quality			1	0.44***	0.96***	−0.03	−0.05
Total Score				1	0.52***	0.88***	0.01
EFA Positive					1	0.05	−0.07
EFA Negative						1	−0.06
Age							1

*$p = \leq.05$, **$p = \leq.01$, ***$p = \leq.001$.
Legend: Pearson's r correlation coefficients of Vietnamese BSS-R total and subscale scores, exploratory factor analysis (EFA)-derived positive (1) and negative (2) birth experience subscales and participant age.

Discussion

The findings from this statistical validation of the Vietnamese version of the BSS-R are different to those of the original UK version of the instrument, given that a two-factor model, instead of a three-factor model, offered a good fit to the data (Table 3). Within this two-factor VN-BSS-R, five items loaded onto '*Positive birth experiences'* and the other five onto '*Negative birth experiences'*. It is important to note that the two items that compose the 'Women's personal attributes' scale in the three-factor model, '*I felt very anxious during my labour and birth*' and '*I felt out of control during my birth experience*', map onto the negative subscale in the two-factor VN-BSS-R model. This finding informs us that WA subscale is not presenting as it does in the original UK version and some of the other previous BSS-R validations.

Explanations may be embedded in Vietnamese culture, with societal constructions about the right to have choice and expectations of how care is delivered being different to other countries. Firstly, this could be theorised in relation to the WA subscale of the three-factor model, which explores women's levels of anxiety and perceived control. One reason for Vietnamese women responding differently to women in other countries which have replicated the original three-factor model could be because Vietnam is a collectivist culture (Quynh, 2021). Within collectivist cultures, people perceive themselves to be part of a group which emphasises needs and goals of the assembly over and above individual wants (Quynh, 2021). In collectivist cultures, relationships with group members are interconnected and play a central role in the construction of personal identity, which contrasts with individualistic societies such as the UK where personal desire is prioritised and social behaviour is directed by individual attitudes and preferences (Grossmann & Santos, 2016). Evidence shows that collectivist societies present with greater conformity (Bond & Smith, 1996), which could explain why 'Women's personal attributes' did not present as a separate subscale in the two-factor VN-BSS-R model, with items mapping on to the 'negative aspects of childbirth' subscale.

During childbirth, women in Vietnam do not have the same level of preference or control as western women. For instance, most women labour in a supine position, episiotomy is routine practice, partners are absent, there is no birth planning and there are reduced options for pain relief (Vu et al., 2023). Our findings show that Vietnamese women who had elective CS reported higher total birth satisfaction scores compared with vaginal birth. This unexpected finding may be explained by the birthing-room environment in Vietnam providing less support than is usual in western cultures, with birth

partners shown to increase satisfaction (Kobayashi et al., 2017), through providing non-pharmacological pain relief and facilitating communication with staff (Bohren et al., 2019). As such, a birth companion who provides emotional support can reduce anxiety (Item 4) and improve self-perceptions of being in control (Item 8) (Bohren et al., 2015). Increased satisfaction for an elective CS can also be explained by women being able to choose auspicious birth dates, as within the culture in some Asian countries, such as China, India, Vietnam and others, women prefer it when they and their family members can choose a 'lucky day' to give birth to their child (Takegata et al., 2020). An alternative influencing factor in birth satisfaction could be that the journey to an elective CS follows a protocol that may serve to reduce anxiety and increase participants' feelings of being in control. The findings of this study also support that multiparous women report higher birth satisfaction, with prior experience of childbirth perhaps working towards reducing anxiety, with Hochman et al. (2023) also supporting the idea that multiparity is associated with reduced risks of a negative birth experience.

In essence, the two-factor model underpinning the VN-BSS-R is explainable and offers a good fit to the data collected. As such, results support the future use of the VN-BSS-R with specific reference to the two subscales identified by the EFA or as the total BSS-R score. The established three subscales (SE, WA, QC) might also be used in the Vietnamese context, given both the KGDV findings and additionally to allow comparison of scale scores with data from other countries. The two-factor structure observed in the current study, though explainable from a measurement and cultural perspective, is atypical in relation to the original UK version of the BSS-R and does certainly warrant further research.

It is important to acknowledge limitations of this study. First, aspects of intended meaning may have been lost in the Vietnamese translation of the founder UK BSS-R, although an extremely robust conversion model was followed. Second, we did not gather demographic data on marital, educational and occupational status. Third, our study was undertaken in the immediate postpartum period when the birth experience is prominent in the participant's mind rather than affected by recall bias. This could focus the experience on negative aspects of fatigue and ongoing pain and discomfort following childbirth. Additionally, participant recruitment varied, with a project manager supporting data collection in the major hospitals whilst medical staff recruited participants in the smaller healthcare facilities. It is appreciated that this may be reflected in the data obtained, with greater familiarity of the recruitment team in the smaller settings. Our team acknowledge that these variables may have influenced results.

Conclusion

The current study sought to develop and validate a Vietnamese version of the BSS-R, with an extensive battery of psychometric approaches used in this investigation. The VN-BSS-R has established itself as an ideally anchored and psychometrically robust tool for measuring birth satisfaction in Vietnamese postpartum women. The findings illustrate that a two-factor model offers a fit to the data. Finding out more about women's birth satisfaction in Vietnam will help maternity care professionals construct environments that create a more positive intrapartum experience (WHO, 2018). This offers an excellent companion scale both to measure birth satisfaction before, and evaluate after, the introduction of

respectful maternity care policies which are acknowledged as improving women's birth experiences (Vu et al., 2023).

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Ethical approval

The study was conducted under the approval of the Ethics Council of Hanoi Maternity Hospitals, Vietnam.

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