

Psychometric Properties of the Breastfeeding and Employment Scale

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ABSTRACT

Objective: To evaluate the psychometric properties of the Breastfeeding and Employment Scale (BES).

Design: Secondary analysis of data from the Infant Feeding Practices Study II survey, a longitudinal study on infant feeding practices.

Setting: United States.

Participants: Women who were employed, breastfeeding, and completed the Infant Feeding Practices Study II BES at the 3-month postpartum assessment ($N = 508$).


Methods: Participants reported their perceived level of breastfeeding support in the workplace by responding to the nine binary items on the BES. We evaluated the instrument's internal consistency reliability (Kuder–Richardson 20), test–retest reliability (Cohen's kappa), construct validity (principal component analysis), and convergent validity (relationship with a similar item).

Results: The internal consistency of the BES (Kuder–Richardson 20 = 0.72) supported the reliability of scale. The test–retest reliability was moderate (0.41–0.60). The Spearman's rho correlation coefficient was 0.66, indicating adequate test–retest reliability for the total BES score between the 3-month and 6-month assessments ($p < .01$). The factor analysis demonstrated that the items cluster into one factor (psychosocial and structural barriers to breastfeeding in the workplace). Participants who reported more barriers to breastfeeding in the workplace also reported a less supportive workplace environment, which supported the convergent validity of the scale.

Conclusion: The psychometric testing of the BES provided initial support for the reliability and validity of the instrument. It may be a useful tool for measuring workplace lactation support in a concise manner.

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Low rates of breastfeeding represent a global public health issue (Walters et al., 2019). Widely recognized health benefits of breastfeeding for women include reduced risk of breast and ovarian cancer, Type 2 diabetes, myocardial infarction, and postpartum depression (Victora et al., 2016). Breastfed children also receive multiple health benefits (Horta et al., 2022; Nuzzi et al., 2021). Multiple national and international health organizations recommend exclusive breastfeeding, defined as infant feeding with breast milk only without any additional food or drink until 6 months of age along with the introduction of solid foods until 12 months of age (Meek & Noble, 2022; World Health Organization, 2021). The Breastfeeding Report Card indicated that in 2019, 55.8% of women in the United States reported breastfeeding at 6 months of the infant's age compared to only 35.9% of women by

12 months of age (Centers for Disease Control and Prevention [CDC], 2022). According to the United Nations Children's Fund and World Health Organization Global Breastfeeding Scorecard (2022), global breastfeeding rates (70% of infants breastfed at 12 months of age) were more than double the U.S. average.

A lack of workplace support for women who breastfeed is one factor that contributes to low breastfeeding rates in the United States (Lauer et al., 2019). Low levels of lactation support from supervisors, an unsupportive work environment, and difficulties locating suitable milk pumping and storage locations are among the most frequently cited reasons why employed women discontinue breastfeeding (Murtagh & Moulton, 2011; Spitzmueller et al., 2016). In a systematic review on the effectiveness of

Evidence is lacking on the reliability and validity of the nine-item Breastfeeding and Employment Scale, which was used in the Infant Feeding Practices Study II.

workplace lactation support programs on breastfeeding outcomes in the United States, Kim et al. (2019) found that workplace lactation support interventions increased breastfeeding initiation, duration, and exclusive breastfeeding, and factors significantly associated with exclusive breastfeeding duration included receiving a breast pump for 1 year, return-to-work consultations, and telephone support.

Given that 75% of women of childbearing age (16–49 years of age) were employed in the U.S. workforce in 2019 (U.S. Bureau of Labor Statistics, 2019), it is important to understand employed women's perceptions of lactation support. Reliable and valid measures of women's perceptions of lactation support are vital for the development, implementation, evaluation, and enforcement of workplace lactation programs and policies to improve maternal and child health outcomes. A concise, reliable, and valid tool for measuring maternal perceptions of workplace lactation support is needed.

Reliable and valid measures of women's perceptions of workplace lactation support include the 12-item Workplace Breastfeeding Support Scale (Bai et al., 2008); 41-item Employee Perceptions of Breastfeeding Support Questionnaire (Greene & Olson, 2008); and the 29-item Perceived Breastfeeding Support Assessment Tool (Hirani et al., 2013). However, there is a lack of research on the development and psychometric properties of the nine-item Breastfeeding and Employment Scale (BES), a concise instrument used to measure workplace lactation support, which was used in the Infant Feeding Practice Study (IFPS) II (CDC, 2017).

Therefore, the purpose of this study was to evaluate the psychometric properties of the BES. Our specific aims were as follows: (a) to test the internal consistency reliability of the BES using data from the 3-month IFPS II assessment, (b) to describe test–retest reliability of the scale using data from the 3-month and 6-month IFPS II assessments, (c) to evaluate the construct validity of the BES using data from the 3-month IFPS II assessment, and (d) to examine the convergent validity of the BES using data from the 3-month IFPS II assessment.

Methods

Design

The IFPS II was a longitudinal study focused on infant feeding practices conducted by the U.S. Food and Drug Administration and CDC between 2005 and 2007 (CDC, 2017). The third cycle of the IFPS, Feeding My Baby and Me, is currently in progress. We requested the data from the CDC and received one file filtered for this analysis. To qualify for participation in this secondary psychometric analysis, employed breastfeeding women completed the IFPS II nine-item BES and survey item measuring perceived level of breastfeeding support in the workplace at the 3-month assessment ($N = 508$). The institutional review board through the Office of Research Integrity at the University of Kentucky deemed this research exempt given that the CDC made the deidentified data publicly available.

Participants

Synovate, a consumer opinion panel consisting of 500,000 households throughout the United States, selected the accessible population for the IFPS II study. Eligible women were at least 18 years old and able to speak English. African American and Hispanic women with low levels of education were oversampled to increase the total number of women represented from these groups (CDC, 2017). Between May and December 2005, Synovate recruited 4,900 pregnant women from across the United States via mail to participate in the IFPS II and invited them to complete a series of 12 surveys, including a demographic survey at baseline, a prenatal survey during the third trimester, a birth screener interview at the expected time of giving birth, and postpartum surveys monthly from 2 to 7 months of age and then every 7 weeks until the infant was 12 months old. For women to be eligible to participate in the postpartum questionnaires, their infants had to be singletons born at greater than or equal to 35 weeks gestation, weigh at least 5 lbs., and be without medical conditions that would affect infant feeding.

Measures

We included the following demographic variables from the baseline prenatal survey: age, race/ethnicity, marital status, household income, prenatal infant feeding intentions, cigarette smoking during pregnancy, and employment status.

Table 1: Characteristics of Participants (N = 508)

Characteristic	n (%)
Race/ethnicity, n = 495	
White, non-Hispanic	428 (86.5)
Black, non-Hispanic	20 (4.0)
Hispanic	23 (4.7)
Other race/ethnicity	24 (4.8)
Marital status, n = 483	
Married	411 (85.1)
Never married	55 (11.4)
Divorced/separated	17 (3.5)
Household income	
\$0–\$29,999	93 (18.3)
\$30,000–\$59,999	208 (40.9)
\$60,000–\$99,999	158 (31.1)
\$100,000+	49 (9.7)
Prenatal infant feeding intentions, n = 507	
Breastfeed only	408 (80.5)
Breast/formula, formula feed only, or don't know yet	99 (19.5)
Smoked cigarettes during pregnancy, n = 507	
No	487 (96.1)
Yes	20 (3.9)
Employment status, n = 445	
Works for someone else full-time	255 (57.3)
Works for someone else part-time	74 (16.6)
Self-employed	44 (9.9)
Other	72 (16.2)
Supportive of breastfeeding at workplace, n = 438	
Very supportive	201 (45.9)
Somewhat supportive	168 (38.4)
Not too supportive	44 (10.0)
Not at all supportive	25 (5.7)

Nine-Item BES. The nine-item BES was used to ask participants who reported breastfeeding in the past 4 weeks and working for pay in the past 4 weeks: “Have you had any of the following experiences during the last 4 weeks?” Response options were dichotomous (“yes” =1 point and

“no” = 0 points) for each of the nine items in the scale. Two questions pertained to perceived social support (coworker and employer/supervisor); four questions pertained to structural issues related to breastfeeding (e.g., break time, space, and milk storage); and the final three questions pertained to feelings encountered by employed breastfeeding women, including worry and embarrassment. Because the existing literature is lacking regarding the scaling, scoring, and meaning of the BES, we calculated a total score that ranged from 0 to 9 points for the 3-month and 6-month assessments. Higher scores indicated more perceived barriers related to breastfeeding in the workplace.

Workplace Environment Item. The Workplace Environment Item (WEI) was used to ask participants who reported working for pay during the past 4 weeks the following question on the 3- and 6-month postpartum surveys: “In your opinion, how supportive of breastfeeding is your place of employment?” Response options included 1= *not at all supportive*, 2 = *not too supportive*, 3 = *somewhat supportive*, and 4 = *very supportive*. Higher scores indicated a more supportive workplace environment. Although participants were retained in the analysis based on having completed the BES, there were missing values among those included in the study for other variables. Of the 508 participants in the study, 70 did not complete the WEI (14%). Employment status was missing for 63 participants (12%), and the remaining variables were missing for at most 5% of the retained sample, including marital status (missing for 25 [5%]), race/ethnicity (missing for 13 [3%]), feeding intention (missing for 1 [$<1\%$]), and smoking status (missing for 1 [$<1\%$]).

Data Analyses

We summarized study data using descriptive statistics, including means and standard deviations or frequency distributions. Due to the dichotomous nature of the responses in the nine-item BES (with each item categorized as yes/no), we used the Kuder–Richardson 20 (KR20) to evaluate the internal consistency reliability at the 3-month time point (N = 508). We used item-total correlations to assess the associations of the individual items with the total score and KR20 with item omitted to evaluate the change in reliability if the item was not included. We conducted test–retest reliability of the scale using the subsample that had responses at 3 and 6 months (n = 277). To evaluate test–retest reliability among the nine binary items, we used Cohen's kappas.

Table 2: Frequency of Responses and Reliability Estimates of the Breastfeeding and Employment Scale (*N* = 508)

Breastfeeding and Employment Scale Item	"Yes" Responses, <i>n</i> (%)	Item Total Correlation	Kuder–Richardson 20 Coefficient if Item Deleted
1. A coworker made negative comments or complained to me about breastfeeding.	22 (4.3)	0.27	0.71
2. My supervisor or employer made negative comments or complained to me about breastfeeding.	8 (1.6)	0.23	0.72
3. It was hard for me to arrange break time for breastfeeding or pumping milk.	154 (30.3)	0.51	0.67
4. It was hard for me to find a place to breastfeed or pump milk.	99 (19.5)	0.52	0.66
5. It was hard for me to arrange a place to store pumped breast milk.	27 (5.3)	0.27	0.71
6. It was hard for me to carry the equipment I needed to pump milk at work.	51 (10.0)	0.46	0.68
7. I felt worried about keeping my job because of breastfeeding.	21 (4.1)	0.34	0.70
8. I felt worried about continuing to breastfeed because of my job.	91 (17.9)	0.50	0.67
9. I felt embarrassed among coworkers, my supervisor, or my employer because of breastfeeding.	42 (8.3)	0.43	0.68

The BES consists of nine binary items; therefore, factor analysis based on the tetrachoric correlation matrix of the items is appropriate to evaluate construct validity. The emphasis of the factor analysis was exploratory because to our knowledge, the psychometric characteristics of this instrument have not yet been published. We initially hypothesized that the nine-item instrument may have two dimensions given that some items were focused on job-specific or interpersonal concerns related to coworkers, whereas others were related to having the time, space, and supplies for pumping or breastfeeding. Given the relatively small number of items and the degree of association among the items, we also considered the unidimensional solution as a possibility. We assessed convergent validity by testing for associations between each of the nine individual items and total score of the BES with a similar measure, namely, the item on the IFPS II that pertains to a supportive workplace environment, which was also evaluated at the 3-month assessment (CDC, 2017). We evaluated convergent validity using the Mann–Whitney *U* test for the individual items and Spearman's rank correlation for the total score. We analyzed data using SAS, version 9.4; we used an a priori alpha level of .05 throughout for inferential testing.

Results

Table 1 describes sample characteristics of the participants (*N* = 508). Participants ranged in age from 18 to 45 years, and their mean age was

29.8 years (*SD* = 5.2). They were primarily White, non-Hispanic (87%), and married (85%). Most of the participants (72%) had household incomes between \$30,000 and \$99,999. Four fifths of participants (81%) indicated their intention to exclusively breastfeed during the prenatal period. Nearly all participants (96%) did not smoke cigarettes during the prenatal period. More than half of participants (57%) worked for someone else full-time (defined as at least 35 hours per week). Approximately 50% of participants indicated that their workplace exhibited a high level of support for breastfeeding, and the proportions decreased progressively across the less supportive categories.

Item Frequencies and Internal Consistency Reliability

The prevalence estimates for the various aspects of breastfeeding barriers are shown in Table 2. The most frequently indicated barrier was the difficulty in arranging break time for breastfeeding or pumping milk, endorsed by 154 (30.3%) participants. Other more common barriers were finding a place to breastfeed or pump (*n* = 99, 19.5%) and feeling worried about continuing breastfeeding because of the job (*n* = 91, 17.9%). The barriers least frequently identified were negative comments or complaints from a supervisor or an employer (*n* = 8, 1.6%), feeling worried about keeping the job because of breastfeeding (*n* = 21, 4.1%), and difficulty in arranging a place to store pumped milk (*n* = 27,

5.3%). The KR20 was 0.72 for the entire BES, indicating acceptable internal consistency. Inter-item correlations ranged from -0.03 (Items 2 and 5) to 0.50 (Items 3 and 4), and the mean was 0.22 (see Table 2). Nearly half of correlation coefficients ($n = 17$, 47%) were less than 0.20 , demonstrating that the items may not fit well together as a single construct.

Test–Retest Reliability

The test–retest reliability findings are shown in Table 3. The test–retest degree of agreement was moderate, and most Cohen's kappas were between 0.41 to 0.60 (Landis & Koch, 1977). This level of agreement suggests that for most of the items, there was a consistent response by participants between 3 months and 6 months. For example, of the 277 participants who completed the 3- and 6-month BES, the most frequently endorsed challenges at both time points included arranging break time to breastfeed or pump (Item 3), finding a place to breastfeed or pump (Item 4), and worry about continuing to breastfeed because of their job (Item 8). Although there were small declines in the number of participants who said “yes” to Items 4 and 8 between 3 and 6 months, arranging break time for breastfeeding or pumping (Item 3) remained a challenge. The other 6 items on the instrument were endorsed by fewer than 6% of respondents at both time points.

Construct Validity

Given the content of the items, that is, some focused on job concerns and interpersonal interactions, and others focused on the time, space, and equipment needed to breastfeed or pump milk, we investigated the two-component and unidimensional solutions to evaluate the factor structure of BES (see Table 4). The two-component solution is based on the promax (oblique) rotation, which is a combination of a varimax (orthogonal) rotation followed by the oblique rotation. This type of rotation allows the two components to be correlated, which is intuitive here because the KR20 for this scale was greater than 0.70 .

A review of the rotated component loadings suggests that although the items do have some separation into the groups we had hypothesized (interpersonal/job concerns vs. resources for breastfeeding/pumping), there is also overlap among three of the items, suggesting that the two components are associated. In addition, the KR20 values for these two identified subscales of the total scale are 0.58 and 0.64 , which are both

The psychometric testing of the Breastfeeding and Employment Scale provided initial support for the reliability and validity of the instrument.

less than what has commonly been accepted as the desired cutoff of 0.70 to indicate an acceptable reliability for an instrument (Taber, 2018). Although this is the cutoff suggested for Cronbach's alpha, it would apply here as well because the KR20 is a special case of this more general reliability measure. It is not surprising that the KR20s dropped when the number of items was approximately halved, but this suggests that four or five items may be too few to get a reliable assessment of the support of breastfeeding in the workplace. As confirmation of this conclusion, the single-component solution is also shown in Table 4. Each of the component loadings is greater than the desired threshold of 0.40 , which suggests that each item contributes to the total and that the items form a single construct. This finding is reinforced by a $KR20 = 0.72$ for the entire BES.

Convergent Validity

As shown in Table 5, there was a significant relationship between the ordinal WEI and each of the items on the BES apart from the second item, “My supervisor or employer made negative comments or complained to me about breastfeeding.” This item had “no” responses for all 277 participants who also completed the WEI, so it was impossible to evaluate convergent validity for this scale relative to this item. For the eight remaining items in the scale, the relationship with WEI was significant, and the magnitude of the means demonstrate that for all of these items (Items 1 and 3–9), the scores given by those who said “yes” to the item were lower than the scores among those who said “no.” Given the ordering of the four categories in the WEI, with larger scores indicating greater support of breastfeeding, this supports convergent validity of nearly all of the BES items because the direction of the relationship between the BES items and WEI is positive and significant. We also considered the total score of the BES, with 1 point for each “yes” response. Among the participants included in this analysis, the total score had an actual range of 0 to 8, and it was significantly associated with the WEI at 3 months. Spearman's rho for this association was -0.29 ($p < .01$), and the correlation was negative (as expected), because a high score on the BES is indicative of a greater

Table 3: Test–Retest Reliability of the Breastfeeding and Employment Scale at the 3-Month and 6-Month IFPS II Assessments ($n = 277$)

Breastfeeding and Employment Scale Item	"Yes" Responses at 3 Months, n (%)	"Yes" Responses at 6 Months, n (%)	Cohen's Kappa [95% CI]
1. A coworker made negative comments or complained to me about breastfeeding.	8 (2.9)	9 (3.3)	0.45 [0.15, 0.75]
2. My supervisor or employer made negative comments or complained to me about breastfeeding.	0 (0.0)	8 (2.9)	—
3. It was hard for me to arrange break time for breastfeeding or pumping milk.	82 (29.6)	83 (30.0)	0.63 [0.53, 0.73]
4. It was hard for me to find a place to breastfeed or pump milk.	49 (17.7)	40 (14.4)	0.53 [0.40, 0.67]
5. It was hard for me to arrange a place to store pumped breast milk.	14 (5.1)	12 (4.3)	0.44 [0.19, 0.68]
6. It was hard for me to carry the equipment I needed to pump milk at work.	23 (8.3)	15 (5.4)	0.38 [0.18, 0.59]
7. I felt worried about keeping my job because of breastfeeding.	8 (2.9)	6 (2.2)	0.41 [0.08, 0.74]
8. I felt worried about continuing to breastfeed because of my job.	47 (17.0)	34 (12.3)	0.32 [0.17, 0.47]
9. I felt embarrassed among coworkers, my supervisor, or my employer because of breastfeeding.	15 (5.4)	10 (3.6)	0.37 [0.12, 0.62]

Note. IFPS = Infant Feeding Practice Study.

number of barriers to breastfeeding/pumping, whereas a high score on the WEI suggests a greater perception of support in the workplace. This finding further supports the convergent validity of the BES.

Discussion

Summary and Interpretation

The psychometric testing provided initial support for the validity and reliability of the BES. Our findings show that the nine-item BES may be a concise instrument for measuring workplace lactation support. However, further testing is needed. Compared to the nine-item BES, internal consistency reliability for the 12-item and modified 18-item Workplace Breastfeeding Support Scale and the 29-item Perceived Breastfeeding Support Assessment Tool are strong and range from 0.77 to 0.89, respectively (Bai et al., 2008; Bai & Wunderlich, 2013; Hirani et al., 2013; Leon-Larios et al., 2019; Martin et al., 2015; Tanguskan et al., 2020; Wambach & Britt, 2018). Similarly, reliability coefficients were strong (range = 0.77–0.87) for the 41-item Employee Perception of Breastfeeding Support Questionnaire (Greene & Olson, 2008) compared to the adequate internal consistency reliability for the BES in this analysis (0.72). Interitem correlations (ranging from –0.03 to 0.50) indicated questionable homogeneity of

the BES. Reliability coefficient differences among the various measures of workplace lactation support may be related to a variety of factors, including the length of the test, homogeneity of items, choice of response options, test instructions, reliability of the scorer, group variability, and testing environment.

In contrast to the single-component solution for the BES identified in this analysis, the 12-item Workplace Breastfeeding Support Scale consists of four factors: break time, technical support, workplace environment, and workplace policy (Bai et al., 2008). Two additional reliable and valid measures of workplace lactation support each contain two factors: the 29-item Perceived Breastfeeding Support Assessment (workplace environmental support and social environmental support) and the 41-item Employee Perceptions of Breastfeeding Support Questionnaire (workplace policies/organizational culture and manager/coworker support; Greene & Olson, 2008; Hirani et al., 2013).

Before our study, the literature was lacking on the reliability and validity of the nine-item IFPS II BES. The only known publication using the nine-item scale focused on workplace lactation support and job satisfaction in a sample of 488 participants. Those authors excluded three of the items

Table 4: Principal Component Analysis Solutions of the Breastfeeding and Employment Scale ($N = 508$)

Breastfeeding and Employment Scale Item	Rotated Factor Pattern		Unidimensional Solution
	Promax	Oblique Rotation (Two Components)	
2. My supervisor or employer made negative comments or complained to me about breastfeeding.	1.08	−0.35	0.60
7. I felt worried about keeping my job because of breastfeeding.	0.72	0.30	0.77
1. A coworker made negative comments or complained to me about breastfeeding.	0.70	0.19	0.68
8. I felt worried about continuing to breastfeed because of my job.	0.65	0.47	0.84
9. I felt embarrassed among coworkers, my supervisor, or my employer because of breastfeeding.	0.62	0.44	0.80
5. It was hard for me to arrange a place to store pumped breast milk.	−0.40	1.01	0.41
6. It was hard for me to carry the equipment I needed to pump milk at work.	0.29	0.76	0.77
3. It was hard for me to arrange break time for breastfeeding or pumping milk.	0.34	0.71	0.77
4. It was hard for me to find a place to breastfeed or pump milk.	0.40	0.67	0.79

Note. Bold indicates the desired threshold of 0.40 or greater for component loadings.

in the BES (Items 7, 8, and 9) because they viewed them as a separate construct (feelings of worry and embarrassment), which may have led to bias in their model for predicting job satisfaction (Whitley et al., 2019). Indeed, the results of the psychometric evaluation reported here show that deleting these three items reduces the internal consistency reliability of the BES ($KR20 = 0.72$ with the full nine-item scale, and $KR20 = 0.61$ when retaining only Items 1–6) and that the three items do not load on a separate construct. Furthermore, the analysis reported here included data from the 3-month and 6-month assessments of women who were breastfeeding and currently employed ($n = 277$). Regarding test–retest reliability, Whitley et al. (2019) used the simple agreement percentage (the percentages of each item response that were the same at both time points) between the 3- and 6-month assessments as well as Cohen's kappa coefficient. Results for the simple agreement percentage ranged from 84.5% (Item 3) to 96.8% (Item 1) and the kappa coefficient ranged from 0.0 (Item 2) to 0.63 (Item 3). The test–retest reliability results in our analysis are comparable to the findings by Whitley et al. (2019).

Limitations

One limitation of the existing IFPS II data set used to conduct the psychometric evaluation of the nine-item BES was the use of a nonprobability

sampling method. Selection bias may be a threat to external validity of this psychometric evaluation, limiting the generalizability of the findings to the entire population of employed women in the United States. Maternal recall bias and social desirability bias are additional limitations, given that responses were self-reported for all questionnaires. Additionally, researchers collected the data between 2005 and 2007, before the implementation of the Break Time for Nursing Mothers' Law under the Affordable Care Act in 2010. The Fair Labor Standards Act and the Break Time for Nursing Mothers Act requires employers to provide reasonable break time and a private, non-bathroom place for nursing women to express breast milk during the workday for 1 year after the child's birth (Kozhimannil et al., 2016). The recent passage of the Providing Urgent Maternal Protections for Nursing Mothers Act in 2022 would strengthen the Break Time law by providing additional coverage for salaried workers and other employees currently excluded from protections, clarification on break time pay if pumping occurs during working hours, and remedies for nursing women similar to those available for other violations of the Fair Labor Standards Act (Maloney, 2021). Therefore, findings may not be representative of the views of current employed breastfeeding women, and the psychometric analysis may not reflect the impact of current federal breastfeeding legislation. Further testing is required to ascertain the usefulness of the BES given the period between

Researchers need to conduct additional testing of the Breastfeeding and Employment Scale to further evaluate its reliability and validity in more diverse populations.

instrument development and its use in the IFPS II and the status of U.S. workplace lactation support policy. Finally, the IFPS II was only available in English, which limits the cross-cultural application of the findings.

Implications

The sample of participants who completed the BES at the 3-month assessment consisted of primarily White, married, and highly educated women with strong intent to breastfeed after giving birth. Employed breastfeeding women with these characteristics may have different breastfeeding perceptions, practices, and types of employment than those who are racially and ethnically diverse, unmarried, and with low education levels. Pitonyak et al. (2015) conducted a longitudinal study with 1,226 women using IFPS II data to determine predictors of exclusive breastfeeding. College educated and married women were associated with greater odds of exclusive breastfeeding lasting longer than 4 months. Conversely, a plan to return to work after birth, living in the Southern region of the United States, and postpartum depression were associated with lower odds of exclusive

breastfeeding lasting longer than 4 months (Pitonyak et al., 2015).

Dagher et al. (2016) found comparable results in a prospective cohort study with 816 women from Minnesota who were hospitalized for childbirth. They measured breastfeeding initiation during hospital enrollment and breastfeeding cessation rates at 6 months after birth. The odds of breastfeeding initiation were greater for women who held professional jobs, had graduate degrees, and did not smoke prenatally. Survival analysis showed that breastfeeding cessation by 6 months after birth was greater for professional workers, for women who returned to work at any time during the 6 months after birth versus those who did not return, for single women than for married women, for every educational category compared to graduate school, and for those with no family or friends who breastfed (Dagher et al., 2016).

Conclusion

The reliability and validity of the BES was supported in a sample of employed breastfeeding women in the United States who participated in the IFPS II. The low respondent burden of the BES was the main strength of this short scale in measuring employed women's perceptions of workplace lactation support. As a unidimensional scale, the BES could be helpful in reducing

Table 5: Evaluating Convergent Validity of the Breastfeeding Employment Scale Items With the WEI at the 3-Month IFPS II Assessment ($n = 438$)

Breastfeeding and Employment Scale Item	Average WEI Score		Mann-Whitney <i>U</i> Test Statistic	<i>p</i>
	"Yes" Response, <i>M</i>	"No" Response, <i>M</i>		
1. A coworker made negative comments or complained to me about breastfeeding.	2.80	3.27	5.0	.03
2. My supervisor or employer made negative comments or complained to me about breastfeeding.	3.43	3.24	0.3	.58
3. It was hard for me to arrange break time for breastfeeding or pumping milk.	2.96	3.38	24.6	<.01
4. It was hard for me to find a place to breastfeed or pump milk.	2.80	3.36	28.6	<.01
5. It was hard for me to arrange a place to store pumped breast milk.	2.68	3.27	7.3	.01
6. It was hard for me to carry the equipment I needed to pump milk at work.	2.70	3.31	14.8	<.01
7. I felt worried about keeping my job because of breastfeeding.	2.68	3.27	6.0	.02
8. I felt worried about continuing to breastfeed because of my job.	2.90	3.33	15.3	<.01
9. I felt embarrassed among coworkers, my supervisor, or my employer because of breastfeeding.	2.79	3.29	8.1	.01

Note. IFPS = Infant Feeding Practice Study; WEI = Workplace Environment Item.

response burden in subsequent workplace lactation support studies, particularly given the yes/no format of the response option. However, researchers need to further evaluate the reliability and validity of the instrument, especially in more diverse populations of employed women. After further research and testing, health care practitioners and researchers could use the BES to develop, implement, and evaluate workplace lactation support programs; guide public health policy; and better understand the barriers still in place to continuing breastfeeding while working. This knowledge will further elucidate the relationships among workplace lactation support, breastfeeding practices, and maternal and child health outcomes.

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CONFLICT OF INTEREST

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