

# Infant feeding and internalized stigma: The role of guilt and shame

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## Abstract

Globally the rates of breastfeeding duration are extremely low and postnatal mental health issues are common. As a result, it is important to examine the emotions that underlie these matters. Across two studies (one correlational study  $N = 160$  and one experimental study  $N = 118$ ), we examined participants' experiences of shame and guilt when feeding their baby, and the relationship between these emotions with breastfeeding behaviors and internalized stigma. We also examined the psychosocial factors that predict internalized stigma, and whether shame and guilt mediate these relationships. We focused on three factors that have been shown to be associated with internalized stigma in other domains: self-esteem and social support (Study 1), as well as self-efficacy (Study 2). Multiple regression revealed that experienced guilt uniquely predicted a shorter duration of exclusive breastfeeding (Study 1). Higher self-efficacy (Study 2), self-esteem, and perceived social support (Study 1) predicted lower internalized stigma of feeding choice. We found that shame was a mediator for the self-esteem and internalized stigma relationship (Study 1), while guilt was a mediator for the self-efficacy and internalized stigma relationship (Study 2). Our findings highlight the importance of experienced shame and guilt in mothers' infant feeding experiences. The current results can inform future research and the design of interventions to improve breastfeeding rates and reduce feelings of stigma.

## 1 | INTRODUCTION

Breastfeeding can be beneficial to infants and mothers, positively impacting physical and psychological outcomes (Gartner et al., 2005; Howie et al., 1990; Oddy, 2002). For example, breastfeeding has been found to encourage the production of oxytocin, a hormone which is connected to positive feelings and connectedness, with this hormone being released immediately at the beginning of a feed (Uvnäs-Moberg et al., 2020). Breastfeeding also encourages bonding and attachment between mother and baby (Barnett et al., 1995; Radzimirski & Callister, 2015).

Although there have been improvements in the uptake of breastfeeding, breastfeeding rates are low across the globe, particularly when focusing on the duration or maintenance of breastfeeding (Rollins et al., 2016; Victora et al., 2016). Thus, it is important to understand the factors that can increase the amount of time that women continue to breastfeed. However, it is also essential to understand women's experiences in relation to their infant feeding method. Specifically, to examine the emotions and feelings of stigma women experience because of their infant feeding method. These feelings should be examined because around 10% of new mothers experience postnatal mental health issues,

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such as depression (e.g., Dennis et al., 2017; Woody et al., 2017). One source of these mental health issues may be the negative emotions and feelings of stigma women experience because of the way they feed their baby. As a result, in the current research (one correlational study and one experimental), we examined the self-conscious emotions and psychosocial factors that are associated with both breastfeeding behaviors and internalized stigma.

### 1.1 | Internalized stigma and infant feeding

Infant feeding is a highly scrutinized and moralized issue that signals different parenting “camps” (Faircloth, 2013; Kukla, 2006; Murphy, 1999). This moralization may contribute to the formula-milk versus breastfeeding debate where both sides often feel stigmatized because of the way they feed their baby. Täuber (2018) found that when we moralize a health issue (i.e., cigarette smoking, weight, or a healthy lifestyle) we are more likely to stigmatize those that do not act in accordance with the norm (e.g., those who are overweight), resulting in less social cohesion. Thus, it can be assumed that, since infant feeding can be moralized, mothers may feel stigmatized based on the way that they feed their baby. Specifically, feelings of stigma can be accompanied by the belief that one’s infant feeding method does not align with social, cultural, or moral norms. Norms about infant feeding seem to be heavily intertwined with cultural beliefs (e.g., what is the appropriate amount of time to breastfeed), demographic factors (e.g., ethnicity), and contextual factors (e.g., breastfeeding in private vs. public), see for example Acker, 2009; McMillan et al., 2008. Therefore, norms about infant feeding are likely to vary, and this can impact both breastfeeding and formula-feeding women.

In the studies presented here, extending previous research on what people consider to be normative, we focus on the internalization of the perceived public stigma by mothers. To the best of our knowledge, while there is evidence of public stigma toward mothers because of their infant feeding choices (Fallon et al., 2017; Kominou et al., 2017), no previous research has examined internalized stigma. Therefore, the current research will examine the experience of internalized stigma in mothers because of the way they feed their infant, both in relation to formula feeding and breastfeeding. We will also examine the contributing factors for their stigma becoming internalized, such as self-conscious emotions and social support.

Stigmatization occurs when a person possesses or is believed to possess, “some attribute or characteristic that conveys a social identity that is devalued in a particular social context” (Crocker et al., 1998, p. 505). Stigma is a multifaceted construct and can be considered as three separate but correlated constructs: experienced, perceived, and internalized stigma (Brohan et al., 2010; LeBel, 2008; Van Brakel, 2006). According to the stigma-induced identity threat model (Major & O’Brien, 2005), a devalued social identity can be threatening and can have a negative impact on people’s mental and physical health. One reason for this is that public stigma can be internalized when people become aware of the stigmatizing attitudes of others, they respond with feelings of shame, blame, and

low self-esteem (Corrigan, Watson, & Barr, 2006; Corrigan, Watson, & Miller, 2006; Ritscher et al., 2003; Vass et al., 2015). Not feeding one’s infant in a socially normative way could be considered as a devalued social identity (e.g., not complying with the expected role of a mother), the stigmatization related to the mother’s identity could be perceived as a threat, and mothers may then internalize the public views (e.g., mothers should breastfeed discreetly, only up to a certain age, and they should not use any formula). Therefore, it is important to examine the self-conscious emotions and psychosocial factors that may be associated with internalization of stigma.

### 1.2 | Psychosocial factors: Social support, self-esteem, and self-efficacy

Previous research has highlighted detrimental consequences for targets of stigma, for example in areas of mental health and substance abuse. Stigmatized individuals are more prone to low self-esteem, depression, anxiety, shame, and poorer sleep (for a review see Major & O’Brien, 2005). This is likely to occur when stigmatized individuals become aware of the public’s stigmatizing attitudes, agree with the stereotypes, and respond with feelings of shame, blame, hopelessness, guilt, and fear of discrimination (Corrigan & Penn, 1999; Corrigan & Watson, 2002). In general, stigmatized individuals have a greater risk for mental (e.g., depression) and physical (e.g., coronary heart disease, stroke) health problems (see Livingston & Boyd, 2010; Major & O’Brien, 2005 for reviews).

A systematic review has identified several psychosocial variables that are associated with internalized stigma of mental illness, including empowerment, quality of life, hope, self-esteem, self-efficacy, and social support (Livingston & Boyd, 2010). In particular, three of these variables (self-esteem, social support, and self-efficacy) may play an important role in the internalized stigma of one’s infant feeding method.

Social support has been found to be associated with lower internalized stigma in other domains (e.g., substance abuse, Birtel et al., 2017). Additionally, social support from significant others (e.g., family, partner, or friends) has consistently been associated with improved wellbeing (for a review see Thoits, 2011). Social support not only buffers the negative impact of stress on health but also motivates people towards better self-care (Cohen & Wills, 1985; Thoits, 2011). Social support has also been found to be related to positive breastfeeding experiences and outcomes (Raj & Plichta, 1998). Stigma has also been negatively associated with self-esteem (Corrigan, Watson, & Barr, 2006; Link et al., 2001), and perceived social support has been positively associated with self-esteem (Thoits, 2011). Thus, higher levels of social support and self-esteem may be associated with lower levels of internalized stigma.

Additionally, self-efficacy, which is a social cognitive variable, has been found to be a positive predictor of breastfeeding behaviors (Lau et al., 2018). Prior evidence also indicates that internalized stigma in the mental health domain can reduce feelings of self-efficacy (Livingston & Boyd, 2010). In the current research we

focus on breastfeeding self-efficacy, which is domain-specific, and a more general sense of parenting self-efficacy, to examine how these variables relate to breastfeeding experiences. Studies have suggested that breastfeeding self-efficacy is one of the most important contributors to breastfeeding success, that is, continuation of breastfeeding (Blyth et al., 2002). However, it is not known whether breastfeeding self-efficacy is related to internalized stigma. Also, it is not known whether the more general concept of parenting self-efficacy will have positive relationships with both breastfeeding experiences and internalized stigma. Therefore, based on previous research, self-efficacy, self-esteem, and social support may all have separate influences on the breastfeeding experience and feelings of internalized stigma.

### 1.3 | Emotional factors: Shame and guilt

Emotional factors have been found to play an important role in breastfeeding outcomes (Shepherd et al., 2017). In relation to the emotions that women experience in response to infant feeding, prior evidence has indicated that women experience a range of self-conscious emotions, such as shame, guilt, and embarrassment (Russell et al., 2021). This review also identified that these self-conscious emotions can be both anticipated and experienced and are strongly related to societal and moral norms.

For example, Shepherd and colleagues conducted a quantitative survey and found that anticipated regret (e.g., "Mothers may regret not breastfeeding their baby"), and anticipated pride ("Mothers who breastfeed should feel proud"), positively predicted exclusive breastfeeding duration (Shepherd et al., 2017). Fallon and colleagues found that mothers who gave formula to their babies experienced feelings of guilt and stigma in relation to their feeding choice (Fallon et al., 2017; Komninou et al., 2017). Thomson and colleagues conducted a qualitative study, which revealed that both breastfeeding and non-breastfeeding mothers express shame in relation to their feeding choices, which often becomes internalized (Thomson et al., 2015). Women themselves attributed these shame experiences to feeling like an inadequate mother, feeling judged, insufficient support, and feeling like they are treated as a mere object, in the case of breastfeeding. The authors argued that shame, more so than guilt, captures women's infant feeding reactions, as it can be internalized and is tied to social judgment.

Therefore, there is emerging evidence of the self-conscious emotions that women feel in relation to feeding their babies. However, prior quantitative findings have focused on anticipated emotions (e.g., Shepherd et al., 2017) and emotions women experience because of their infant feeding choice, whether internally or externally caused (e.g., Fallon et al., 2017). It is also necessary to examine the feelings of shame and guilt women report when feeding their baby and how these emotions relate to experiences of stigma, which we do in this research.

Previous research also suggests that feelings of shame, more so than guilt, are likely to undermine positive relationships, that is,

between high self-esteem, social support, and self-efficacy with lowered internalized stigma. First, not only stigma but also shame can be internalized (Cook, 1987). Second, shame involves more self-condemnation than guilt (Thomson et al., 2015). It is believed that shame is particularly damaging to the self and is often associated with stigmatization and lower self-esteem (Tangney & Dearing, 2002). Shame, more so than guilt, has more global and detrimental effects on the self (Tangney & Dearing, 2002). Previous research also indicates that shame is associated with mental health problems and substance use (Gilbert, 2000; Luoma et al., 2008). Furthermore, internalized shame has been shown to mediate the relationship between perceived stigma and wellbeing (e.g., self-esteem, mental health, sleep) in people with substance misuse (Birtel et al., 2017). In summary, shame seems likely to play a large role in experiences of internalized stigma.

### 1.4 | The present research

We conducted one correlational study (Study 1) and one experimental study (Study 2). In these studies, we focused on the psychosocial and emotional factors that are related to infant feeding and internalized stigma, rather than the physical and demographic barriers which negatively impact infant feeding, particularly the breastfeeding experience (see Patil et al., 2020 for a review), as there is a clear gap in knowledge as to how these psychosocial and emotional factors interact to impact internalized stigma.

We examined the emotions women may experience when feeding their baby (e.g., shame and guilt), and whether these emotions are related to the longer duration of exclusive breastfeeding and intention to continue breastfeeding. Since guilt is more strongly tied to appraisals of behavior (Russell et al., 2021), goal-oriented behaviors, and often result in reparative or defensive responses (Baumeister et al., 2007), we predicted that guilt experienced when feeding will be uniquely related to breastfeeding duration. In comparison since shame focuses on the self and can be internalized (Tangney & Dearing, 2002) it is predicted that shame will play a greater role in internalized stigma than behavioral outcomes. Thus, in addition to behavioral outcomes, we examined whether shame or guilt is more strongly associated with internalized stigma across both studies.

We also examined the psychosocial factors that are associated with internalized stigma. For the current research, we focused on social support, self-esteem, and self-efficacy as these variables have been associated with both the breastfeeding experience and internalized stigma. In Study 1, we focused on self-esteem and social support, examining these variables together as they are interrelated. In Study 2, we tested the relationship between self-efficacy (parenting and breastfeeding) and internalized stigma. We attempted to induce a heightened experience of parenting self-efficacy in this study, examining the impact on experiences of shame and guilt, as well as internalized stigma. Finally, in both studies, we tested whether shame and guilt mediate the relationships between the three psychosocial factors (self-esteem, social support, and self-efficacy) and

internalized stigma of infant feeding choice. In summary, our hypotheses were:

**Hypothesis 1** *Experienced guilt, more so than shame, will be associated with a shorter duration of exclusive breastfeeding and breastfeeding intentions.*

**Hypothesis 2** *Experienced shame, more so than guilt, will be associated with a higher internalized stigma of the feeding method.*

**Hypothesis 3** *Higher levels of self-esteem, self-efficacy, and social support will be associated with a lower internalized stigma of the feeding method.*

**Hypothesis 4** *The relationships between the psychosocial factors (self-esteem, self-efficacy, and social support) and internalized stigma will be more strongly mediated by shame than guilt.*

## 2 | STUDY 1 METHOD

### 2.1 | Participants

We recruited 160 women from Prolific (<https://prolific.ac>). GPower analysis indicated that an adequate sample size would be 159 (assuming an effect size of 0.05, with a power of 0.80 and  $\alpha$  of 0.05, performing regression analysis). Participants were only from the UK, as we did not want cultural factors to impact the results, such as maternity leave policies (i.e., the allowance is up to 12 months in the UK but this differs by country). Additionally, participants had a child under 2 years of age (from this sample 49 participants had children under 6 months). We used the cut-off of women with children under the age of 2 for this sample as it aligns with the WHO (2003) breastfeeding guidelines, and we also assumed that infant feeding experiences would be most salient to this sample. Our sample had a variable age distribution ( $M = 30.11$ ,  $SD = 5.07$ , aged 18–42 years), and 90% of the sample had some further or higher education. Participants were compensated £2.50 for their time, according to Prolific's guidelines. There were no data exclusions. The study received approval from the local institutional Ethics Committee.

### 2.2 | Materials and procedure

Participants first read the online information sheet, gave their informed consent, and then filled in demographic items (i.e., gender, age, nationality, level of education, and whether they had any children under a certain age). Our measures were emotions experienced when feeding their baby, self-esteem, social support, internalized stigma, and exclusive breastfeeding duration.<sup>1</sup> The measures of

breastfeeding duration and infant feeding method were adapted from measures used by Shepherd et al. (2017). Before filling in these items we instructed participants that when questions referred to “feeding your baby,” we are referring to feeding your baby milk (i.e., breastmilk or formula milk).

#### 2.2.1 | Exclusive breastfeeding duration

To measure the duration of breastfeeding, participants were asked, “Did you exclusively breastfeed (defined here as baby only receiving breast milk from breast or expressed) your baby at any time?” With the following options (1) No; (2) Yes, less than 1 month; (3) Yes, greater than 1 month but less than 2 months; (4) Yes, greater than 2 months but less than 4 months; (5) Yes, greater than 4 months but less than 6 months; (6) Yes, 6 months or more.

#### 2.2.2 | Infant feeding method

Participants self-categorized their infant feeding behaviors, (1) My baby only receives/d breast milk; (2) My baby only receives/d formula milk; (3) My baby receives/d a mixture of breast milk and formula (combination fed); (4) I started breastfeeding my baby but now/then formula feed/fed; (5) I started breastfeeding my baby but now/then combination feed/fed; (6) Other. For combination and formula feeding types, we collapsed among those who initiated breastfeeding but then switched to the other method with those who always did this method.

#### 2.2.3 | Perceived social support

Participants then completed the previously validated Multidimensional Scale of Perceived Social Support (Zimet et al., 1988), which was a 7-point Likert scale (Cronbach  $\alpha = 0.92$ ), ranging from 1 = *strongly disagree* to 7 = *strongly agree*. This scale contains 12 items that focus on perceived social support from friends, family, and a significant other. For example, participants rated whether “There is a special person who is around when I am in need.” A composite score was created by the mean of all items, with higher scores indicating that they perceive more social support.

#### 2.2.4 | Self-esteem

Participants also completed a self-esteem scale (Rosenberg, 1965). This previously validated scale contains 10 items, each item is evaluated using a 5-point Likert scale (Cronbach  $\alpha = 0.90$ ), ranging from 1 = *strongly disagree* to 5 = *strongly agree*. An example item is “On the whole, I am satisfied with myself.” A composite score was created by the mean of all items, with higher scores indicating higher self-esteem.

<sup>1</sup>We included other measures for both studies which were not part of the main research questions addressed in the current paper. For example, we also included other filler emotions: positive emotions, as well as other focused emotions of anger and disgust. The full list of measures and data can be found at: [https://osf.io/96jra/?view\\_only=0cba50b2a17c4994aaa09ff758d92559](https://osf.io/96jra/?view_only=0cba50b2a17c4994aaa09ff758d92559).

**TABLE 1** Descriptive statistics for all measures (whole sample and split by feeding method) Study 1

	Overall (n = 160)	Mothers–Breastfeeding (n = 48)	Mothers–Formula feeding (n = 73)	Mothers–Combination feeding (n = 35)
Self-esteem	3.58 (0.76)	3.76 (0.66) <sup>a</sup>	3.48 (0.73) <sup>a</sup>	3.65 (0.84) <sup>a</sup>
Social support	5.69 (1.16)	5.76 (1.19) <sup>a</sup>	5.62 (1.19) <sup>a</sup>	5.80 (0.10) <sup>a</sup>
Internalized stigma	2.54 (1.24)	2.47 (1.16) <sup>a</sup>	2.51 (1.25) <sup>a</sup>	2.73 (1.34) <sup>a</sup>
Shame when feeding baby	1.50 (1.17)	1.36 (0.77) <sup>a</sup>	1.55 (1.36) <sup>a</sup>	1.47 (0.94) <sup>a</sup>
Guilt when feeding baby	1.96 (1.79)	1.10 (0.46) <sup>a</sup>	2.55 (2.22) <sup>b</sup>	1.90 (1.39) <sup>b</sup>

Note: Means are presented with standard deviations in parentheses. Different subscripts denote statistically significant means based on ANOVAs, testing for differences by feeding method. Breastfeeding/Formula/Combination feeding represent how mothers categorized their feeding method. Emotions (e.g., Shame when feeding baby) were measured using a 9-point Likert scale, in which higher scores represent more intense emotions. Perceived social support was measured using a 7-point agreement scale, higher scores indicate that they feel more support. Self-esteem was measured using a 5-point agreement scale, higher scores indicate more self-esteem. Internalized stigma was measured using a 7-point agreement scale, higher scores indicate that they felt more stigmatized.

	Social support	Self-esteem	Shame	Guilt	Internalized stigma
Self-esteem	0.367 <sup>**</sup>				
Shame	-0.119	-0.295 <sup>**</sup>			
Guilt	-0.163 <sup>*</sup>	-0.219 <sup>**</sup>	0.358 <sup>**</sup>		
Internalized stigma	-0.266 <sup>**</sup>	-0.304 <sup>**</sup>	0.296 <sup>**</sup>	0.346 <sup>**</sup>	
Exclusive breastfeeding	0.061	0.102	-0.018	-0.351 <sup>**</sup>	-0.008

\* $p < .05$ .; \*\* $p < .01$ .

**TABLE 2** Correlations for all measures Study 1

## 2.2.5 | Emotions experienced when feeding baby

Participants indicated the specific emotions they experienced when feeding their baby, using a 9-point Likert scale ranging from 1 = *not at all* to 9 = *extremely*. There were two terms for both guilt (guilty and regret;  $r = 0.78$ ,  $p < .01$ ), and shame (embarrassed and ashamed;  $r = 0.60$ ,  $p < .01$ ), means for both guilt and shame were calculated, with higher scores indicating more intense emotion. This measure was adapted from previous research on shame and guilt (Noon, 2019), but adjusting this measure for the infant feeding context.

## 2.2.6 | Internalized stigma

To measure internalized stigma, the Internalized Stigma of Mental Illness scale (ISMI; Ritsher et al., 2003) was adapted by changing the term “mental illness” to “how I feed my baby.” Participants were asked to complete the 8 items (such as “People often assign certain characteristics to me because of the way I feed my baby”), using a 7-point Likert scale, ranging from 1 = *strongly disagree* to 7 = *strongly agree*. A composite internalized stigma score was computed by the mean of these items (Cronbach’s  $\alpha = 0.84$ ), with higher scores indicating greater feelings of internalized stigma.

## 3 | RESULTS

### 3.1 | Initial analysis: Infant feeding choice

From the current sample, 48 mothers exclusively breastfed (30%), 35 combination-fed, and 73 formula-fed their infants, and 4 participants stated “other”. Like the self-categorization question, 35% of participants reported that they exclusively breastfed for 6 months or more (33% no exclusive breastfeeding, 16% less than 1 month, 6% 1–2 months, 4% 2–4 months, 6% 4–6 months). Descriptive statistics for all variables can be found in Table 1 and correlations in Table 2. In order to test whether there were differences between the three feeding methods in our outcome measures, we conducted ANOVAs (see Table 1). Results indicated that mothers, regardless of infant feeding method, experienced similar levels of shame, stigma, self-esteem, and social support. The only significant difference was in terms of experienced guilt (see Table 1), specifically mothers who formula-fed experienced more guilt while feeding their baby than breastfeeding mothers, and mothers who combination fed experienced marginally more guilt than mothers who breastfed exclusively. There was no difference in levels of guilt between formula-feeding mothers and combination-feeding mothers.

**TABLE 3** Total, direct, and indirect effects with shame as the mediator for Study 1

Predictor/Outcome	B	SE (B)	p	95% BCa CI	
				LL	UL
<i>Self-esteem/Internalized stigma</i>					
Total effect	-0.50	0.12	<.001	-	-
Direct effect	-0.39	0.13	.003	-	-
Indirect effect	-0.11	0.05	-	-0.22	-0.02
<i>Internalized stigma/Self-esteem</i>					
Total effect	-0.19	0.05	<.001	-	-
Direct effect	-0.14	0.05	.003	-	-
Indirect effect	-0.05	0.02	-	-0.09	-0.00
<i>Social support/Internalized stigma</i>					
Total effect	-0.28	0.08	<.001	-	-
Direct effect	-0.25	0.08	.002	-	-
Indirect effect	-0.03	0.02	-	-0.09	0.00
<i>Internalized stigma/Social support</i>					
Total effect	-0.25	0.07	<.001	-	-
Direct effect	-0.24	0.07	.002	-	-
Indirect effect	-0.01	0.02	-	-0.05	0.02

Abbreviations: 95% BCa CI, 95% bias-corrected confidence interval; B, unstandardized coefficient; LL, lower limit; p reported two-tailed; SE, standard error; UL, upper limit.

**TABLE 4** Total, direct, and indirect effects with guilt as the mediator for Study 1

Predictor/Outcome	B	SE (B)	p	95% BCa CI	
				LL	UL
<i>Self-esteem/Internalized stigma</i>					
Total effect	-0.50	0.12	<.001	-	-
Direct effect	-0.39	0.12	.002	-	-
Indirect effect	-0.10	0.05	-	-0.20	-0.02
<i>Internalized stigma/Self-esteem</i>					
Total effect	-0.19	0.05	<.001	-	-
Direct effect	-0.16	0.05	.002	-	-
Indirect effect	-0.03	0.02	-	-0.07	0.00
<i>Social support/Internalized stigma</i>					
Total effect	-0.28	0.08	<.001	-	-
Direct effect	-0.23	0.08	.004	-	-
Indirect effect	-0.05	0.03	-	-0.12	0.00
<i>Internalized Stigma/Social support</i>					
Total effect	-0.25	0.07	<.001	-	-
Direct effect	-0.22	0.08	.004	-	-
Indirect effect	-0.03	0.03	-	-0.09	0.04

Abbreviations: 95% BCa CI, 95% bias-corrected confidence interval; B, unstandardized coefficient; LL, lower limit; SE, standard error; p reported two-tailed; UL, upper limit.

### 3.2 | Exclusive breastfeeding duration

In order to test whether experienced guilt was uniquely associated with breastfeeding duration, we conducted a multiple regression analysis with the two self-conscious emotions (i.e., shame, guilt) as

predictors of exclusive breastfeeding duration. The overall model was significant,  $R^2 = 0.14$ ,  $F(2, 157) = 12.41$ ,  $p < .001$ . Supporting our first hypothesis, we found that guilt experienced when feeding one's baby was related to a shorter duration of exclusive breastfeeding ( $\beta = -0.40$ ,  $t(157) = -4.98$ ,  $p < .001$ ), but shame was not related

to the duration of exclusive breastfeeding behaviors ( $\beta = 0.12$ ,  $t(157) = 1.56$ ,  $p = .12$ ).

### 3.3 | Internalized stigma

Furthermore, we examined whether experienced shame while feeding was uniquely related to internalized stigma (Hypothesis 2). We conducted a multiple regression analysis with the two self-conscious emotions (i.e., shame, guilt) as predictors of internalized stigma. The overall model was significant,  $R^2 = 0.15$ ,  $F(2, 157) = 14.21$ ,  $p < .001$ . We found that both shame ( $\beta = 0.20$ ,  $t(157) = 2.51$ ,  $p = .013$ ) and guilt ( $\beta = 0.28$ ,  $t(157) = 3.49$ ,  $p = .001$ ) significantly predicted higher levels of internalized stigma. Next, we tested whether self-esteem and perceived social support were positively related to internalized stigma (Hypothesis 3). As hypothesized, a multiple regression analysis showed that higher self-esteem ( $\beta = -0.24$ ,  $t(157) = -3.00$ ,  $p = .003$ ) and higher perceived social support ( $\beta = -0.18$ ,  $t(157) = -2.27$ ,  $p = .025$ ) significantly predicted lower internalized stigma of feeding choice,  $R^2 = 0.12$ ,  $F(2, 157) = 10.82$ ,  $p < .001$ .

### 3.4 | Mediation analyses

We then computed mediation analyses to assess whether mothers' shame and guilt mediated the relationships between the psychosocial factors (self-esteem, social support) and internalized stigma (Hypothesis 4). We conducted separate mediation analysis for shame and guilt due to relationships between these variables, our proposed hypotheses, and sample size considerations. Additionally, we did not use multiple mediation analysis as we did not have hypotheses on whether the mediating effects of guilt and shame are independent or not (Chen & Hung, 2016). However, we tested both causal pathways. Bootstrapping analyses (5,000 subsamples, 95% confidence interval) were conducted using the PROCESS macro provided by Hayes (2017, Model 4). Results can be found in Table 3 for shame and in Table 4 for guilt. As hypothesized, self-esteem and perceived social support significantly predicted internalized stigma,  $p < .05$  for all total effects. Specifically, higher self-esteem and higher perceived social support were associated with lower internalized stigma. The reverse directional mediation analysis was also significant for these relationships. There were significant indirect effects for self-esteem and internalized stigma through shame, when testing both causal relationships. Guilt mediated the relationship between self-esteem and internalized stigma; however, the other causal relationship between internalized stigma and self-esteem was not significant. When social support was either the dependent variable or the independent variable using internalized stigma as the other variable (i.e., both causal pathways) the indirect effects were not significant for either shame or guilt.

## 4 | STUDY 2

In Study 1, we found that guilt was the only significant predictor of breastfeeding duration (Hypothesis 1). Both shame and guilt were associated with higher levels of internalized stigma, thus, partially supporting hypothesis 2, as we did not find shame to be a unique predictor of internalized stigma of feeding method. Shame was a mediator for the relationship between self-esteem and internalized stigma but not for social support and internalized stigma. Contrary to predictions, guilt was also a mediator for the self-esteem and internalized stigma relationship. Interestingly, the self-conscious emotions did not mediate the relationships between social support and internalized stigma.

Study 2 extends these initial findings, by examining a different factor that may play a role in internalized stigma of feeding choice, self-efficacy. In Study 2, we not only measured self-efficacy but also manipulated it. Breastfeeding self-efficacy has previously been shown to impact breastfeeding behaviors (Lau et al., 2018); however, research is needed to examine how it relates to internalized stigma and self-conscious emotions. We decided to focus on both breastfeeding and parenting self-efficacy as the latter may be more applicable to mothers that do not breastfeed. In Study 2, we also added another breastfeeding outcome measure, that is, desire to continue breastfeeding.

## 5 | METHOD

### 5.1 | Participants

One hundred ninety-five participants were recruited via snowball sampling through social media and advertising at local children's centers. When recruiting we aimed to reach mothers from a range of social and economic backgrounds by targeting a diverse range of social media groups and a wide geographic range of children's centers. Participants were required to be over 18 years old, UK residents, and a mother with their first child 6 months or younger. We decided to only recruit mothers with babies under 6 months for this study because the WHO (2003) recommends that infants are exclusively breastfed for the first 6 months of life; therefore, their infant feeding experiences are likely to be most salient, and the intervention to be most relevant for them. Of the 195 individuals recruited 131 met the inclusion criteria. Additionally, 13 participants did not complete any scales after the intervention, so were excluded. Our final sample (118 women) ranged in age from 21 to 42 years ( $M = 31.08$ ,  $SD = 4.29$ ), and 73% of the sample had some further or higher education. The babies ranged in age from 1 week to 6 months old. Participants were offered the chance to enter a prize draw for a £20 gift voucher in return for completing the survey. The study received approval from the local institutional Ethics Committee.

**TABLE 5** Descriptive statistics for all measures (including split by feeding method) for Study 2

	Overall (n = 118)	Exclusive Breastfeeding (n = 57)	Non-exclusive (n = 61)
Breastfeeding self-efficacy	45.80 (17.01)	56.71(10.04) <sup>a</sup>	32.56 (12.89) <sup>b</sup>
Parenting self-efficacy	73.50 (13.05)	73.32(12.80) <sup>a</sup>	73.18 (15.30) <sup>a</sup>
Shame when feeding baby	1.77 (1.38)	1.58 (1.01) <sup>a</sup>	2.19 (1.84) <sup>a</sup>
Guilt when feeding baby	1.78 (1.69)	1.28 (1.12) <sup>a</sup>	2.20 (1.80) <sup>b</sup>
Internalized Stigma	2.05 (0.77)	1.86 (0.66) <sup>a</sup>	2.35 (0.87) <sup>b</sup>

Note: Means are presented with standard deviations in parentheses. Different subscripts denote statistically significant means based on t-tests, testing for differences by feeding method. Breastfeeding self-efficacy, was measured using a 5-point Likert scale, higher scores indicate greater confidence in breastfeeding. Parenting self-efficacy was measured using a 6-point agreement scale, higher scores indicate that they felt more competent in their parenting. Emotions (e.g., Shame when feeding baby) were measured using a 9-point Likert scale, in which higher scores represent more intense emotions. Internalized stigma was measured using a 7-point agreement scale, higher scores indicate that they felt more stigmatized.

**TABLE 6** Correlations for all measures Study 2

	Parenting self-efficacy	Breastfeeding self-efficacy	Shame	Guilt	Internalized stigma
Breastfeeding self efficacy	0.178				
Shame	-0.301**	-0.167			
Guilt	-0.292**	-0.342**	0.369**		
Internalized stigma	-0.253*	-0.328**	0.485**	0.458**	
Breastfeeding intention	0.010	0.714**	0.103	-0.142	-0.106

\* $p < .05$ ; \*\* $p < .01$ .

## 5.2 | Design, materials, and procedure

This experiment used a between-participants design, the independent variable had two levels, parenting self-efficacy recall versus control. The measures were self-efficacy (breastfeeding and parenting), experienced emotions (shame and guilt), breastfeeding behavior, and internalized stigma. After reading the study information sheet and providing informed consent, participants were asked to complete demographic and screening questions for inclusion criteria. Participants were randomly assigned to either the self-efficacy recall condition or control group. The self-efficacy intervention was adapted from the self-efficacy intervention workbook designed by Nichols et al. (2009). The recall task asked participants to recall a parenting achievement from the last week (self-efficacy condition), or to recall the reason for the choice of their infant's name (control condition). Following this, participants from both conditions were reminded of the benefits of breastfeeding taken from the NHS website.

All participants were then asked to complete the following questionnaires, which included the same measures for emotions experienced when feeding their baby as in Study 1 (guilt items  $r = 0.79$ ,  $p < .01$ ; shame items  $r = 0.56$ ,  $p < .01$ ). They also completed the same

internalized stigma scale (Cronbach's  $\alpha = 0.83$ ) and exclusive breastfeeding duration/feeding choice scales, as in Study 1.

We added a measure of breastfeeding intentions, that is, desire to continue breastfeeding. Participants were asked to indicate how long they intended to carry on breastfeeding, with the following options (a) I don't intend to breastfeed any longer; (b) 3 months; (c) 6 months; (d) 9 months; (e) 12 months; 18 months; (g) 2 years +. They were asked to include supplementing solid foods with breastmilk and breastmilk from the breast or expressed in their desired duration estimate.

Additionally, participants completed two measures of self-efficacy. Breastfeeding self-efficacy was assessed using the short-scale form (Dennis & Faux, 1999), a 14-item scale (e.g., "I can always determine that my baby is getting enough milk") in which participants indicate their level of confidence on a 5-point Likert scale (1 = *not at all confident* and 5 = *always confident*) (Cronbach  $\alpha = 0.96$ ). Parenting self-efficacy was assessed using the Parenting Sense of Competence scale (Gibaud-Wallston & Wandersman, 1978), a 17 item scale (for example: "Being a parent is manageable, and any problem is easily solved"), with responses recorded on a 6-point Likert scale (1 = *strongly disagree* and 6 = *strongly agree*) (Cronbach  $\alpha = 0.88$ ).



## 6 | STUDY 2 RESULTS

### 6.1 | Initial analysis: Infant feeding choice and self-efficacy intervention

From the current sample, 57 mothers exclusively breastfed (48%), 13 combination-fed (11%), and 28 formula-fed their infants (5 participants put other; 15 did not answer the question). The feeding methods were collapsed into two groups; exclusive breastfeeding and non-exclusive breastfeeding, the latter includes both combination feeding and formula feeding because there were few mothers who classified themselves as combination feeding in this study, and roughly half of the sample was exclusively breastfeeding. The majority of the sample (77%) reported that they intended to give their baby breastmilk for 6 months or more.

Unfortunately, the self-efficacy recall task did not influence mothers' intentions to continue breastfeeding, neither the main effect of condition ( $p = .84$ ) nor the two-way interaction ( $p = .76$ ) was found to be significant. Additionally, we found no difference between the self-efficacy and recall conditions for our internalized stigma measure, self-efficacy measures, and self-conscious emotion measures, as a result, we collapsed across the whole sample in order to test our main hypotheses. The non-significant results may be attributed to the control condition highlighting affiliative relationships.

Descriptive statistics for all variables can be found in Table 5 and correlations in Table 6. In order to assess whether there were differences between those who did or did not exclusively breastfeed  $t$ -tests were conducted (see Table 5 for effects), we found that those who exclusively breastfed experienced higher levels of breastfeeding self-efficacy than those who did not exclusively breastfeed; however, there was no difference in parenting self-efficacy. Like Study 1, those who did not exclusively breastfeed experienced more guilt than those who exclusively breastfed, but they did not differ on levels of shame experienced. Finally, in this study we found that women who did not exclusively breastfeed had higher levels of internalized stigma than women who did exclusively breastfeed.

### 6.2 | Breastfeeding intention

In order to test hypothesis 1, that guilt will uniquely predict exclusive breastfeeding intention, multiple regression analysis was conducted with the two self-conscious emotions (i.e., shame, guilt) as predictors of exclusive breastfeeding intention (same analysis as Study 1). The relationship between guilt and breastfeeding intention was approaching significance ( $\beta = -0.19$ ,  $t(98) = -0.19$ ,  $p = .07$ ), but shame was not related to breastfeeding intentions ( $\beta = 0.24$ ,  $t(98) = -0.16$ ,  $p = .12$ ), additionally the overall model was not significant,  $R^2 = 0.04$ ,  $F(2,98) = 2.72$ ,  $p = .11$ .

### 6.3 | Internalized stigma

Next, we examined whether the shame mothers experience when feeding their baby is uniquely associated with internalized stigma (Hypothesis 2). We conducted the same analysis as in Study 1, a multiple regression analysis with the two self-conscious emotions (i.e., shame, guilt) as predictors of internalized stigma. The overall model was significant,  $R^2 = 0.31$ ,  $F(1,101) = 22.48$ ,  $p < .001$ . Replicating Study 1, we found that both shame ( $\beta = 0.35$ ,  $t(101) = 3.78$ ,  $p < .001$ ) and guilt ( $\beta = 0.30$ ,  $t(101) = 0.30$ ,  $p = .002$ ) significantly predicted higher levels of internalized stigma.

### 6.4 | Self-efficacy

Additionally, we tested whether both forms of self-efficacy (parenting and breastfeeding) were associated with lower feelings of internalized stigma (Hypothesis 3). We conducted a multiple regression analysis, entering breastfeeding self-efficacy, and parenting self-efficacy as predictors of internalized stigma. As predicted, both higher parenting self-efficacy ( $\beta = -0.20$ ,  $t(96) = -2.08$ ,  $p = .04$ ) and higher breastfeeding self-efficacy ( $\beta = -0.30$ ,  $t(96) = -3.13$ ,  $p = .002$ ) significantly predicted lower internalized stigma of feeding choice,  $R^2 = 0.15$ ,  $F(2, 96) = 8.69$ ,  $p < .001$ .

### 6.5 | Mediation analyses

Finally, we conducted similar mediation analyses as for Study 1, except parenting self-efficacy and breastfeeding self-efficacy were the predictors, in order to examine whether shame and/or guilt could explain the relationships between self-efficacy and internalized stigma (Hypothesis 4). Similar to Study 1, we tested both directional pathways in our analysis. Results can be found in Table 7 for shame and in Table 8 for guilt. As hypothesized, both forms of self-efficacy were significantly related to internalized stigma ( $p < .05$ ), that is, all total effects for both causal pathways were significant. Specifically, higher parenting and breastfeeding self-efficacy were associated with lower internalized stigma, and vice versa. Shame was found to mediate the parenting self-efficacy and internalized stigma relationship, but the indirect effect was not significant when internalized stigma was the predictor and parenting self-efficacy was the outcome. Guilt was a mediator for both forms of self-efficacy (breastfeeding and parenting) with internalized stigma, when testing both causal pathways, which suggests that guilt may play a more important role in the experience of internalized stigma than previously thought.

## 7 | DISCUSSION

The present research examined relationships between experienced shame and guilt, with breastfeeding outcomes and internalized

**TABLE 7** Total, direct, and indirect effects with shame as the mediator for Study 2

Predictor/Outcome	B	SE (B)	p	95% BCa CI	
				LL	UL
<i>PSE/Internalized stigma</i>					
Total effect	-0.01	0.01	.01	-	-
Direct effect	-0.01	0.01	.18	-	-
Indirect effect	-0.13	0.05	-	-0.23	-0.03
<i>Internalized stigma/PSE</i>					
Total effect	-4.34	1.66	.01	-	-
Direct effect	-2.52	1.87	.18	-	-
Indirect effect	-0.11	0.05	-	-0.21	0.01
<i>BSE/Internalized stigma</i>					
Total effect	-0.02	0.00	.001	-	-
Direct effect	-0.01	0.00	.006	-	-
Indirect effect	-0.08	0.05	-	-0.18	0.00
<i>Internalized stigma/BSE</i>					
Total effect	-7.14	2.07	.001	-	-
Direct effect	-6.61	2.37	.006	-	-
Indirect effect	-0.02	0.05	-	-0.13	0.09

Abbreviations: 95% BCa CI, 95% bias-corrected confidence interval; B, unstandardized coefficient; BSE, breastfeeding self efficacy; LL, lower limit; PSE, parenting self efficacy; SE, standard error; p reported two-tailed; UL, upper limit.

**TABLE 8** Total, direct, and indirect effects with guilt as the mediator for Study 2

Predictor/Outcome	B	SE (B)	p	95% BCa CI	
				LL	UL
<i>PSE/Internalized stigma</i>					
Total effect	-0.01	0.01	.01	-	-
Direct effect	-0.01	0.01	.19	-	-
Indirect effect	-0.13	0.06	-	-0.25	-0.03
<i>Internalized stigma/PSE</i>					
Total effect	-4.34	1.66	.01	-	-
Direct effect	-2.46	1.87	.19	-	-
Indirect effect	-0.11	0.06	-	-0.24	-0.02
<i>BSE/Internalized stigma</i>					
Total effect	-0.02	0.00	.01	-	-
Direct effect	-0.01	0.00	.035	-	-
Indirect effect	-0.13	0.07	-	-0.29	-0.02
<i>Internalized stigma/BSE</i>					
Total effect	-7.14	2.07	.01	-	-
Direct effect	-4.95	2.33	.035	-	-
Indirect effect	-0.10	0.08	-	-0.27	0.04

Abbreviations: B, unstandardized coefficient; BSE, breastfeeding self efficacy; SE, standard error; p reported two-tailed; 95% BCa CI, 95% bias-corrected confidence interval; LL, lower limit; PSE, Parenting Self Efficacy; UL, upper limit.

stigma. Specifically, we tested whether shame and/or guilt were related to breastfeeding duration and the desire to continue breastfeeding. We also examined whether shame and/or guilt mediate

the relationships between psychosocial factors (i.e., self-esteem, social support, self-efficacy), and internalized stigma of infant feeding method. Importantly, we examined both causal pathways,

psychosocial factors as predictors of internalized stigma, and internalized stigma as predictors of psychosocial factors, mediated by shame and guilt.

In Study 1, we found that most of our sample fed their babies with formula milk but in terms of the UK national average a larger proportion of participants reported that they exclusively breastfed past 6 months (35%). In comparison, McAndrew et al. (2012) reported that 81% of women initiate breastfeeding in the UK, while 34% of women are doing any breastfeeding at 6 months, and only 1% of women are exclusively breastfeeding. Similarly, in Study 2, which only included mothers with babies under 6 months, we found that nearly half of the sample was currently exclusively breastfeeding (48%). Additionally, most participants (77%) reported that they intend to continue breastfeeding anywhere from 6 months to over 2 years. When recruiting participants, we aimed to recruit a representative sample and advertised the study as being about emotions and infant feeding broadly, but nevertheless, self-selection bias is still possible.

We found that mothers, regardless of feeding method, experienced similar levels of shame when feeding their baby; however, formula and combination feeding mothers reported experiencing more guilt when feeding their baby in comparison to breastfeeding mothers. Related to this, we found that the guilt mothers experienced when feeding their baby was related to a shorter duration of exclusive breastfeeding (Study 1) and a lesser desire to continue breastfeeding (Study 2). This may have occurred because guilt is an emotion that is tied to action, and when experiencing high levels of guilt this may actually inhibit positive behaviors, as a defense mechanism (Baumeister et al., 2007). It is also possible that women experienced more guilt after giving up breastfeeding, so when thinking back about their feeding experiences recalled experiencing more guilt. However, due to the correlational nature of the design and measures used the directionality of this relationship cannot be determined. Nevertheless, experiencing guilt is associated with giving up breastfeeding, more so than shame.

These results suggest that we need to help alleviate feelings of guilt that mothers experience when feeding their baby, and/or giving up breastfeeding. Future research may endeavor to disentangle the source of guilt, and whether mothers feel more anticipated guilt than experienced guilt, that is, guilt prior to or after the decision to discontinue breastfeeding. It is important to examine this area of research further as there are many known physical (e.g., pain and lactation issues) and social barriers to breastfeeding (e.g., lack of professional and social support) (see Patil et al., 2020 for a review), which lead mothers to stop breastfeeding before they intended (Larsen & Kronborg, 2013).

Interestingly, participants reported similar levels of internalized stigma regardless of feeding method in Study 1, whereas, in Study 2, we found that formula-feeding mothers reported experiencing more internalized stigma than mothers who were exclusively breastfeeding. This finding replicates that of Fallon and colleagues (2017) on public stigma, where formula feeding mothers experienced more feelings of stigma. However, similar to the previous point, this

difference in findings across the two studies suggests the need for future research to systematically compare experiences of stigma in the present, as well as what mothers anticipate and recall experiencing. It also highlights that, when examining breastfeeding experiences, it is essential to bear in mind the age of the infant and the differential impact of this on mothers' experiences. The two studies included different inclusion criteria, Study 1—baby under 2 years and Study 2—baby under 6 months, which may have impacted the results. This is an important point to consider as prior research also uses variable age ranges and outcome measures (Russell et al., 2021).

We found that, regardless of feeding method, mothers reported similar levels of self-esteem and social support. Furthermore, our results affirmed the idea that social support and self-esteem can act as buffers for internalized stigma. Feelings of shame, but not guilt, played a key role in explaining the relationship between self-esteem and internalized stigma. This is in line with previous research in the health domains of substance abuse and mental health (Birtel et al., 2017; Corrigan, Watson, & Miller, 2006; Gilbert, 2000; Link et al., 2001; Thoits, 2011). Our findings suggest that future interventions should take into account how to encourage more positive feelings and self-views. For example, using self-affirmations (Cohen & Sherman, 2014) or eliciting positive emotions (Fredrickson, 2001), may be ways to encourage positive self-esteem. The elicitation of positive emotions seems particularly important as Fredrickson's (2001) "broaden and build" model has shown that positive emotions can be used to reduce specific negative emotions and can lead to positive outcomes, such as wanting to be a better person and facilitating action.

In terms of self-efficacy, those who exclusively breastfed experienced higher levels of breastfeeding self-efficacy than those who did not exclusively breastfeed; however, there was no difference in parenting self-efficacy. We found that higher levels of both parenting and breastfeeding self-efficacy were related to lesser experiences of internalized stigma. Contrary to our predictions guilt was a reliable mediator for both relationships, but shame only played a role in the parenting self-efficacy and stigma relationship. This may have occurred because breastfeeding self-efficacy is more strongly related to breastfeeding behaviors, which is evident from prior evidence in the field, as breastfeeding self-efficacy is a known predictor of breastfeeding behaviors (see Lau et al., 2018 for a review on the role of breastfeeding self-efficacy in breastfeeding behaviors). Guilt is also known as being an action or event-related emotion being tied to approach behaviors generally (Tangney & Dearing, 2002; Sheikh & Janoff-Bulman, 2010). On the other hand, shame may have played a role in the more general parenting self-efficacy because shame has already been linked with "parent shaming" in general (e.g., Furedi, 2001). Also, shame as an emotion is associated with perceptions of the global self (e.g., I am a bad parent) rather than evaluations of a specific event (e.g., I was a bad parent today), Tangney and Dearing (2002); Tangney et al. (2007). As a result, future research is needed to examine what emotions underlie the self-efficacy and stigma relationship. Hope seems like a likely candidate as it has already been shown to be a factor in internalized stigma (Livingston &

Boyd, 2010), though it may be the case that cognitive factors underlie this relationship rather than any specific emotion.

Overall the current results suggest some possible mechanisms by which breastfeeding outcomes can be improved, and how the likelihood of internalized stigma for all mothers, regardless of feeding type, can be reduced. Interventions to reduce negative emotions or increase positive emotions can focus on these mechanisms in their design. To further understand these relationships we need to conduct qualitative research to hear the experiences of women who have breastfed and to explore how these emotions influence breastfeeding behaviors and feelings of stigma.

It is also important that future research aims to develop the initial measures used, such as the emotion measures, in terms of establishing reliability, validity, and generalizability. In terms of the breastfeeding behavior measures, future research would benefit from examining whether emotions have differential relationships with breastfeeding initiation, as the current research focuses on breastfeeding duration and intention to continue behaviors. This is important as the emotions experienced when starting infant feeding may differ across the time points of a woman's infant feeding journey.

Focusing on our current measurement of exclusive breastfeeding duration, it should be noted that in both of our samples there was a large proportion of exclusive breastfeeders, which does not reflect the typical proportion of breastfeeders in the UK. This can be partially attributed to our definition of exclusive breastfeeding, although this would not fully account for our sample distribution, as the percentage of women who exclusively breastfeed by expressed milk is likely to be small. Future research may try alternative methods of recruitment, specifically recruiting from areas with lower breastfeeding rates, to examine whether this influences the current results, which is important since breastfeeding is often influenced by societal and contextual factors (Acker, 2009; McMillan et al., 2008).

## 8 | CONCLUSION

The current research aims to inform future research on breastfeeding outcomes, as well as experienced shame, guilt, and internalized stigma in relation to one's infant feeding method. In summary, adding to prior literature on the role of self-conscious emotions in breastfeeding, these studies suggest the unique roles that shame and guilt play in both breastfeeding outcomes and experiences of internalized stigma. We found that guilt is associated with breastfeeding outcomes. Shame plays a role in internalized stigma due to its association with self-esteem. In comparison, guilt is associated with breastfeeding self-efficacy and the internalization of stigma, while both shame and guilt are related to perceptions of parenting self-efficacy and, as a result, experiencing internalized stigma. It is hoped that the findings will ultimately feed into further research and the development of interventions by practitioners and policymakers to improve mothers' infant feeding experiences. Specifically, the current results suggest the importance of reducing experiences of shame and guilt, as well as experiencing positive emotions and

having positive self-views, in order to improve women's infant feeding experiences.

## ETHICS STATEMENT

All participants in our experiments were treated in accordance with the ethical standards of the British Psychological Society and the American Psychological Association. This research received ethical approval from the University of Surrey.

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## DATA AVAILABILITY STATEMENT

The data that support the findings of this research are openly available in the Open Science Framework (OSF) through this link [https://osf.io/96jra/?view\\_only=0cba50b2a17c4994aaa09ff758d92559](https://osf.io/96jra/?view_only=0cba50b2a17c4994aaa09ff758d92559), reference: Infant Feeding Research.

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