Breastfeeding motivation and Self-Determination Theory

Miri Kestler-Peleg a, *, Merav Shamir-Dardikman b, Doron Hermoni c, Karni Ginzburg d,1

a School of Social Work, Ariel University, Israel
b Tel-Aviv Municipality Center of Marital and Family Therapy, Tel Aviv, Israel
c Sackler Faculty of Medicine, Tel-Aviv University, Israel
d Bob Shapell School of Social Work, Tel Aviv University, Israel

ABSTRACT

Rationale: In the current social climate, breastfeeding is regarded as the “gold standard” of babies’ nutrition and optimal mothering. It is not surprising, therefore, that the vast majority of contemporary women begin breastfeeding after they give birth.

Objective: This paper presents two separate quantitative studies conducted in Israel which examined breastfeeding motivation and its association with maternal well-being as derived from Self-Determination Theory (SDT). In Study I, a new breastfeeding motivation scale reflecting the various SDT-informed motivations was developed. Study II sought to validate the structure of the scale and to examine the hypotheses derived from SDT.

Methods: In Study I, which took place in 2007, 130 mothers of at least one child under the age of eight years old filled out the Breastfeeding Motivation Scale. In Study II, which took place during the years 2008–2010, a different sample of 236 women were followed at three different time points: during the third trimester of pregnancy, at eight weeks postnatal, and at five months postnatal. The participants completed the Breastfeeding Motivation Scale and maternal well-being, maternal self-efficacy and maternal attachment questionnaires.

Results: The findings supported the structure of the Breastfeeding Motivation Scale according to SDT. As predicted, autonomous motivation was positively correlated with maternal well-being and self-efficacy, while controlled motivations were positively associated with distress and inversely correlated with self-efficacy. Anxious attachment predicted both controlled and autonomous breastfeeding motivations.

Discussion: The findings support the validity of the SDT for breastfeeding motivations, and highlight the role of these motivations as differentiating between positive and negative subjective well-being, among breastfeeding women.

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1. Background

The World Health Organization and other health organizations recommend that mothers breastfeed their babies until the babies reach the age of two (Israel Ministry of Health, 2014; World Health Organization, 2012). Inspired by public health goals to raise the rate of breastfeeding and extend its duration (United States Department of Health and Human Services, Center for Disease Control and Prevention, 2014), a variety of programs have been developed to promote breastfeeding; these programs have led to a virtual tripling of the numbers of mothers breastfeeding worldwide over the past fifty years (e.g., Israeli Ministry of Health, 2014; United States Breastfeeding Committee, 2014).

This development is due, at least in part, to a change in the social climate. Breastfeeding is currently perceived as an expression of dedicated motherhood which, tailored to the baby’s needs, promotes his/her optimal physical and emotional health (Murphy, 2000); as such, mothers are increasingly being pressured to choose the “right path” (Knaak, 2005), regardless of other circumstances such as pain and discomfort, limited independence, or return to work, (Dykes, 2005; Kelleher, 2006; Stewart-Knox et al., 2003).
With western society today promoting breastfeeding as an obligatory norm (Lee, 2011) and the vast majority of women complying with the imperative to breastfeed, the need to determine why women choose to breastfeed has become a relevant issue.

1.1. Self-Determination Theory

Self-Determination Theory (SDT), developed by Ryan and Deci (2000a; 2000b), is one of the leading motivational theories today. Extensively examined (e.g., Curran et al., 2013; A. E. Halvari, H. Halvari et al., 2013), this theory addresses the issue of how different types of motivations affect an individual's functioning and well-being. According to SDT, individuals tend to engage in activities that interest them (Ryan and Deci, 2000a), and doing so promotes their optimal functioning and well-being. Conversely, under conditions that minimize the satisfaction of basic psychological needs—relatedness, competence, and autonomy—the tendency to engage in interesting and self-fulfilling activities may be attenuated, impairing an individual's functioning and well-being (Ryan and Deci, 2000b). By dictating the extent to which such needs are filled, the social context shapes a person's motivations (Ryan and Deci, 2000a). Thus, in the current social atmosphere, which promotes an expectation to breastfeed as a demonstration of "good mothering", this theory, which distinguishes the level of autonomy, enables us to examine the internalization of social messages for breastfeeding women, as well as their implications.

The level of an individual's autonomy is implicated in his or her motivation. According to the conceptualization of SDT, the most autonomous and self-regulated activities are those driven by intrinsic motivation. This category refers to activities that are engaged in for the activity itself, without any interest in or expectation of action-related outcomes (Ryan and Deci, 2000b). Nonetheless, a great deal of human activity is not driven by intrinsic motivation; social pressures and the need to perform activities that are not necessarily attractive or interesting substantially impinge on and restrict its expression (Ryan and Deci, 2000a).

Extrinsic motivation is motivation that results from interests other than the activity itself. While intrinsically motivated activities are self-regulated, different forms of extrinsic motivation are divided based on the extent to which the regulation of these behaviors is internalized and integrated. Thus, according to SDT, extrinsic motivation is not a categorical concept, since different levels of perceived autonomy exist (Ryan and Deci, 2000a). The least autonomous type of motivation stems from external regulation. This kind of motivation is driven by external needs, i.e., either to gain a reward or to avoid costs (Deci and Ryan, 2008). In the present context, a woman might breastfeed her baby in order to lose weight more quickly or to save on formula costs.

Introjected regulation is driven by the desire to avoid feeling shame, disappointing significant others, and/or gaining their approval. Activities stemming from this type of extrinsic motivation are thus designed to maintain a sense of self-worth in others' eyes (Ryan and Deci, 2000b). In the context of this study, a woman may therefore breastfeed her baby in order not to disappoint her spouse or in order to make her friends think she is a good mother. Activities driven by external or introjected regulation are controlled motivations, which are accompanied by a sense of constraint or coercion (Deci and Ryan, 2008).

Identified regulation is more self-oriented. Reflecting a cognitive recognition of the underlying value of a certain activity, the activity is perceived as important for the self even if it is not necessarily interesting or pleasurable (Ryan and Deci, 2000b). In the present context, a woman may regard breastfeeding as the way in which she can feel important and essential.

The most autonomous type of extrinsic motivation stems from integrative regulation. Activities performed as a result of this type of motivation are performed because they are compatible with one's emotional needs, self-perception, and identity (Ryan and Deci, 2000a). A woman might thus breastfeed her baby because she likes to feel that her baby is exclusively dependent on her. While a woman acting out of extrinsic motivations is driven by purposes other than the performance of the activity itself (Ryan and Deci, 2000b), integrative and identified regulations are (like intrinsic motivation) autonomous motivations because they do not involve any sense of external constraint or coercion (Deci and Ryan, 2008). Intrinsic motivation thus represents the most authentic and autonomous of all motivations. Together with integrative and identified regulation, they constitute the autonomous motivations, whereas controlled motivations include introjected and external regulation. Autonomous and controlled motivations are not mutually exclusive and may occur simultaneously to different degrees.

Various studies indicate that engagement in intrinsically-motivated activities increases well-being (e.g., Ryan and Deci, 2000b; Ng et al., 2012), while engagement in extrinsically-motivated activities reduces well-being (e.g., Sheldon and Krieger, 2007). Research has similarly shown that well-being is affected by types of extrinsic motivation: the more controlled the activities engaged in, the greater the adverse impact on the engaged individual's well-being (e.g., Patrick et al., 2007). Furthermore, in a number of studies, intrinsic motivation has been shown to be a stronger predictor than controlled motivations of prolonged actual behavior (e.g., Barbeau et al., 2009; Silva et al., 2010).

According to SDT, the level of the sense of autonomy that underlies an individual's primary form of motivations is linked to two other basic needs: competence and relatedness. Studies have demonstrated that self-efficacy has been found to be positively associated with intrinsic motivation and negatively correlated with extrinsic motivations (e.g., Ryan and Deci, 2000b; Tabernero, 2011). Secure attachment, reflected in a high sense of relatedness, has been found to be positively associated with intrinsic motivation (La Guardia et al., 2000) and negatively correlated with extrinsic motivations (Wei et al., 2005).

Only a very few studies have focused on motivation for breastfeeding (e.g., Göksen, 2002; Swanson and Power, 2005). None have examined this phenomenon from the perspective of SDT and most suffer from methodological limitations—such as small sample size, low response rate, and retrospective measures (e.g., Brodribb et al., 2007; Racine et al., 2009; Sheehan et al., 2013; Takushi et al., 2008; Wells et al., 2002). These studies have nonetheless documented various motivations for breastfeeding. While Sheehan et al., (2013) identified internal and external pressure to breastfeed, others have provided indirect support for the relevance of SDT in understanding breastfeeding motivations' correlations with maternal key variables. Thus, for example, studies conducted in Brazil (Brennan et al., 1998) and Australia (Takushi et al., 2008) have demonstrated that the most frequently-reported reasons for breastfeeding were for the baby's sake (73.8% and 95.5%, respectively), reflecting identified regulation. An American study (Racine et al., 2009) similarly found that mothers who expressed an intrinsic motivation for breastfeeding breastfed longer than mothers who expressed an extrinsic motivations.

Since the majority of women in the western world are now breastfeeding their babies, and since SDT suggests that the nature of their motivation may affect their well-being, an examination of breastfeeding motivation is called for. To date, however, the reasons motivating women to breastfeed their babies and the implications of this decision have yet to be fully researched. In accordance with SDT, it is hypothesized that breastfeeding which is driven by
autonomous motivations — i.e., intrinsic motivation, integrative regulation, and identified regulation — would be positively associated with maternal well-being, self-efficacy, and secure attachment. It is also hypothesized that breastfeeding-driven by controlled motivations — i.e., external regulation and introjected regulation — would be negatively associated with maternal well-being, self-efficacy, and secure attachment. As the literature on breastfeeding motivation is quite limited, few reliable and valid measures for assessing these constructs exist. Study I thus presents a self-report questionnaire specifically developed to assess breastfeeding motivations according to the SDT perspective. Study II validates the questionnaire and examines the research hypotheses.

2. Study I

Study I sought to develop a tool to measure breastfeeding motivation that would reflect the various motivations propounded by SDT (Ryan and Deci, 2000b).

2.1. Methods

2.1.1. Participants and data collection

Out of interest in the retrospective and reflective perspective of experienced mothers, a convenience sample of 130 Israeli women who were all mothers with at least one child up to the age of eight years old was recruited in 2007 to participate in the study through a snowball sampling procedure. The average age of the participants was 35.58 years \( (SD = 4.58) \), with a mean of 16.73 years of education \( (SD = 2.35) \). Respondents were mothers with 1.97 children on average \( (SD = 1.06; \text{Range: } 1.00–6.00) \), the age of the youngest child being 2.72 years on average \( (SD = 1.74) \).

2.1.2. Measures

Background variables: data was collected regarding the mother’s age, level of education, and number/age(s) of children.

Breastfeeding Motivation Scale (BMS): This scale was designed to test the various SDT-informed motivations in the context of breastfeeding (Ryan and Deci, 2000a). Item generation was based on a deductive approach, in which the theoretical definition of the measured construct was used as a guideline for the development of the items (Hinkin, 1998). Initially we defined six types of breastfeeding motivations according to the SDT. We based the definitions on the extent to which the regulation is internalized and integrated: intrinsic, integrative and identified regulations constituting autonomous motivations, and introjected and two external regulations constituting the controlled motivations. The SDT theoretical framework for breastfeeding motivation was applied by exploring various sources, including a review of the existing literature on breastfeeding and motivation, interviews with breastfeeding mothers, and a focus group of women who had breastfed their child(ren) and were asked why they breastfed. These sources yielded 33 items. Items which dealt with similar content were consolidated, the result of which was the formulation of a total of 24 items describing different motivations for breastfeeding (see Appendix). These items were presented to several breastfeeding women, who were asked to read and evaluate the extent to which the items were understandable. Consequently, a few minor changes were then made in the wording of the items. Next, Q-sort technique was conducted with two academic women as judges from the fields of social work and nursing. Both were breastfeeding at that time. The judges independently classified a set of 24 statements as either acceptable or rejectable for each of the six factors (Nahm et al., 2002). The Cohen's Kappa coefficient of agreement (Cohen, 1960) ranged from 87.5% to 100% with average of 93.05% (intrinsic regulation - breastfeeding enjoyment 87.50%, integrative regulation - bonding with the baby 95.83%, identified regulation - maternal self-perception 87.50%, introjected regulation - significant others’ pressure 100%, external regulation - instrumental needs 91.67% and external regulation - baby’s health 95.83%), which according to Landis and Koch (1977) is an excellent agreement. The final 24 items are presented in the appendix. Respondents were asked to rate on a 4-point Likert scale the extent to which each item matched the reason they chose to breastfeed.

3. Results

A principal axis factoring analysis with promax rotation yielded five factors (eigenvalue > 1) explaining 53% of the variance of breastfeeding motivations (see Table 1). The first factor comprised of nine items that described the pleasure and closeness with babies that mothers drew from breastfeeding. It thus captured both breastfeeding enjoyment and bonding with the baby (eigenvalue = 7.68). This factor, explaining 30% of the variance, reflected a combination of intrinsic motivation and integrative regulation. The second factor — maternal self-perception (eigenvalue = 2.89) — consisted of five items which showed breastfeeding to be a contributing factor to personal self-esteem in maternal perception. Explaining 10% of the variance, this factor reflected identified regulation. The third factor — significant others’ pressure (eigenvalue = 1.86) — consisted of four items which described seeking to please a significant other through breastfeeding. Explaining 6% of the variance, this factor reflected introjected regulation. The fourth factor—the baby’s health (eigenvalue = 1.31) — consisted of two items related to the health benefits that babies derive from breastfeeding. This factor explained 3% of the variance, possibly reflecting external regulation. The fifth factor — instrumental needs (eigenvalue = 1.29) — consisted of three items pertaining to the concrete benefits of breastfeeding. This factor explained 3% of the variance and reflected external regulation as well (see Table 1). Item 1, “Because it is more convenient: you don’t need to deal with bottles and hygiene, you can breastfeed anywhere and in any situation” didn’t load to any of these factors, and was thus removed from the scale. The reliability of these subscales was assessed by an evaluation of their internal consistency, with Cronbach’s α ranging between 0.93 and 0.62 (see Table 1).

As this report indicates, the structure of the scale corresponds to SDT-informed motivations (Ryan and Deci, 2000b), supporting the validity of this scale. One item, Item 22 (Because I like to think that I'm giving him/her a part of myself) was loading based on two factors — intrinsic and integrative regulation — breastfeeding enjoyment and bonding with the baby, and identified regulation — maternal self-perception (loaded value = 0.60). Based on these factors, five subscales were computed as the average score of each factor. Since item 22 was, in its essence, more consistent with identified regulation — maternal self-perception, it was included in this subscale.

Finally, a series of Pearson correlations was conducted in order to examine the associations between the breastfeeding motivation subscales and maternal background variables (age, education, number/age of children). The only association we found between all breastfeeding motivation subscales and all maternal background variables was that maternal education was positively associated with introjected regulation — significant others’ pressure \( (r = 0.31, p < 0.01) \). The other correlations were non-significant.

4. Study II

Study II was conducted to further validate the SDT-informed measurement structure and to examine the hypotheses derived
from SDT. In line with SDT, we hypothesized that breastfeeding driven by autonomous motivations (intrinsic regulation, integrative regulation, and identified regulation) would be positively associated with maternal well-being, self-efficacy, and secure attachment. We also hypothesized that breastfeeding driven by controlled motivations (introjected and external regulation) would be negatively correlated with maternal well-being, self-efficacy, and secure attachment, and would be positively associated with insecure attachment.

In order to distinguish between intrinsic motivation and extrinsic motivations, the “intrinsic and integrative regulation - breastfeeding enjoyment and bonding with the baby” scale was split into two subscales: “intrinsic regulation - breastfeeding enjoyment” and “integrative regulation – bonding with the baby.”

5. Method

5.1. Participants and data collection

Two hundred and thirty-six women were followed at three different time points—during the third trimester of pregnancy (23–42 weeks of pregnancy—T1), six to eight weeks after birth (T2), and four to five months after birth (T3). Since more than 80% of Israeli women utilize public health services as their major form of prenatal monitoring (Dahan et al., 2008), respondents were recruited from eighteen women’s health clinics during the years 2008–2010, through the four Israeli public health funds in eight different cities in the center of Israel. Research assistants approached potential participants, briefed them on the research, and invited them to participate in the study. Questionnaires were filled out at the participants’ homes and returned by mail or e-mail. Institutional Helsinki committees approved the research design, and all of the participants signed informed-consent forms.

Nine hundred and twenty pregnant women were approached, out of which 33.03% declined to participate. The majority of those who declined said they didn’t have the time. Others referred to their lack of interest or their unwillingness to disclose their thoughts. A further 25.33% of those who agreed to participate in the study withdrew for various reasons, including premature labor, health issues, etc. Eventually, a total of 383 women participated in the study at the first measurement time point (T1), a number representing 55.74% of all the women who could participate (see Fig. 1).

The second measurement (T2) took place at about eight weeks after birth (M = 7.73; SD = 1.19). Of the 383 women who participated at T1, 297 of them (or 77.55% of the women who participated at T1) participated at T2. Of these 297 women, 79.50% (N = 236), who still breastfed at T2, constituted the sample for Study II (see Fig. 1). The women who dropped out of the study at this point gave a number of reasons for their decision: a lack of time, distraction and difficulties in concentration due to fatigue, etc. In order to evaluate whether there had been a trend of selective attrition, a series of t-tests and $\chi^2$ analyses were carried out, comparing participants and dropouts in background variables (age, country of birth, education, or weight of the baby) and in subjective well-being as measured at T2, 251 (84.51%) participated in T3. Of these 251 women, 157, who still breastfed at T3, constituted this sample (see Fig. 1). The women who dropped out of the study at this point gave a number of reasons for their decision: a lack of time, distraction and difficulties in concentration due to fatigue, etc. In order to evaluate whether there had been a trend of selective attrition, a series of t-tests and $\chi^2$ analyses were carried out, comparing participants and dropouts in background variables (age, country of birth, education, or weight of the baby) and in subjective well-being as measured at T2 (positive affect, negative affect, postpartum depression, and life satisfaction). These analyses did not yield significant differences between these groups.

A total of 236 postpartum breastfeeding women therefore participated in this study. Their average age was 33.1 years (SD = 4.06), they were relatively well-educated ($M = 16.40$; $SD = 2.03$ years of education), and most had full-time jobs (65.61%). The majority (91.38%) were married or in de facto relationships whose average length was 5.13 years (SD = 4.12), and they had an average of 1.96 children ($SD = 1.09$). The average gestational week

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**Table 1**

Results of the breastfeeding motivation scale principal axis factoring analysis with promax rotation (Study I).

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
<th>Factor 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic and integrative regulation:</td>
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<td></td>
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<tr>
<td>Enjoyment and bonding</td>
<td>0.89</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Maternal self-perception</td>
<td>0.83</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Significant others' pressure</td>
<td>0.82</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baby's health</td>
<td>0.74</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Instrumental needs</td>
<td>0.62</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cronbach's alpha</td>
<td>0.93</td>
<td>0.82</td>
<td>0.82</td>
<td>0.74</td>
<td>0.62</td>
</tr>
</tbody>
</table>
of birth was 39.64 (SD = 1.60), and the average weight of the baby at birth was 3.29 kg (SD = 0.50).

5.2. Measures

Background variables included questions regarding age, years of education, family status, years of marriage, country of birth, employment, family income, number of children (measured at T1), gestational week, number/weight of babies born (measured at T2), and actual breastfeeding (measured at T2 and T3).

The Breastfeeding Motivation Scale (BMS), as presented in Study I, was administered in study II without item 1. Principal axis factoring analysis with promax rotation was conducted in order to validate its structure. The analysis yielded six factors (eigenvalue > 1), very similar to those found in Study I explaining 53% of the variance of breastfeeding motivations. The first factor of Study I—insic and integrative regulation – breastfeeding enjoyment and bonding with the baby, was divided in this analysis into two factors: The first, intrinsic regulation – breastfeeding enjoyment, consisted of 5 items (24, 13, 23, 6, 18; loaded 0.91–0.73, and explained 31% of the variance); The second, integrative regulation – bonding with the baby, consisted of 3 items (19, 15, 21; loaded 0.85–0.45, and explained 3% of the variance). The third factor—identified regulation – maternal self-perception consisted of six items (4, 11, 8, 16, 3, 14, 22, loaded 0.74–0.63) and explained 9% of the variance. The forth factor—proactive regulation – significant others' pressure - consisted of four items (5, 7, 9, 4; loaded 0.78–0.52) and explained 4% of the variance. The fifth factor—external regulation – instrumental needs—consisted of three items (10, 16, 20, loaded 0.70–0.40) and explained 3% of the variance. The sixth factor—external regulation – baby's health—consisted of two items (12, 2; loaded 0.73 and 0.52) and explained 2% of the variance. To evaluate the reliability of the breastfeeding motivation subscales, internal consistency was re-examined (measured at T2 and T3). Cronbach's α ranged between 0.89 and 0.56 (see Table 2).

The Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988) measures individuals' positive and negative affect. It consists of 20 items asking the respondent to rate the extent to which he/she experienced a particular feeling over the last two weeks on a scale ranging from 1 (to a small extent or not at all) to 5 (very often). Two total scores are calculated, the sum of the answers obtained from each index (positive and negative) (Watson et al., 1988). In this study, these scales were measured at T2 and T3, evincing high reliability for both time points (α = 0.83 and 0.90), in line with previous studies (e.g., 0.84 and 0.88) (Rash et al., 2011).

The Edinburgh Postnatal Depression Scale (EPDS) (Cox et al., 1987) is a commonly-used measurement consisting of 10 items relating to symptoms of depression. The respondent is asked to rate to what extent each of them characterizes her feelings over the past week, on a scale from 0 to 3. Following a reversal of relevant items, the sum of the answers indicates the intensity of post-partum depression (Cox et al., 1988). In this study, this measurement was administered at T2 and T3, a high reliability being found (α = 0.89) as reported in other studies (e.g., 0.88) (Logsdon et al., 2009).

The Satisfaction with Life Scale (SWLS) (Diener et al., 1985) consists of five items that assess a person's life in general. The respondent reports to what extent she agrees with each of them on a 7-point scale ranging from 1 (very much opposed) to 7 (strongly agree). A total score is obtained by averaging the answers. The higher the score, the higher the level of life satisfaction (Diener et al., 1985). Previous studies evinced a satisfactory reliability level (e.g., 0.78) (Vassar, 2008), as well as in the current study (α = 0.85 and 0.87, at T2 and T3, respectively).

The Maternal Self-Efficacy Scale is a questionnaire consisting of 18 statements describing the woman's expectations or assessment of the degree of her functional success as a mother, based on Parenting Sense of Competence (PSOC) questionnaire (Johnston and Mash, 1989) and additional relevant statements (Beinart-Babayoff, 2012). The respondent is asked to rate to what extent she agrees with each on a 4-point scale ranging from 1 (not at all) to 4 (greatly). The adapted questionnaire was tested in a pilot study among 54 respondents and found to be reliable (α = 0.86). In this study, the scale was administered at T2 and T3 and demonstrated satisfactory reliability (α = 0.84 and 0.79, respectively).

The Experiences in Close Relationship Scale (ECR) (Brennan et al., 1998) assesses avoidant and anxious attachment. The questionnaire consists of 36 statements describing feelings in relationships with other people, half referring to avoidant attachment and half to anxious attachment. The respondent is asked to rate to what extent she agrees with the statements on a 7-point scale. The score is obtained by averaging the items, a high score reflecting high avoidant/anxious attachment. In this study, the scales were administered at T1 and the reliability was high (α = 0.88 and 0.89), which is in keeping with previous studies (e.g., 0.90 for both scales) (Parker et al., 2011).

5.3. Results

To examine stability of breastfeeding motivation subscales over time, we conducted a series of t-tests for repeated measures. The analyses indicated strong correlations for most subscales between T2 and T3 measures, ranging between 0.82 and 0.50. The motivation to breastfeed in order to enhance the baby's health which stems from external regulation decreased over time (M = 3.94, SD = 0.22 at T2; M = 3.89, SD = 0.34 at T3; p < 0.05), with small effect size (0.02). The other five breastfeeding motivation subscales remained stable over time (p > 0.05). This stability should not be underestimated in light of the considerable emotional and physical vulnerabilities characteristic of this period.

In order to examine the associations between the breastfeeding...
motivation subscales, we conducted a series of Pearson correlations (see Table 2). The majority of the breastfeeding motivation subscales were found to be related to one another at moderate to high positive levels. The inter-correlations between subscales imply, as the theory suggests, that women are breastfeeding for multiple reasons. The exception was the external regulation - baby’s health subscale, which was rarely associated with other breastfeeding motivation subscales. These findings suggest that breastfeeding motivations consist of a set of interrelated and mutually-confirming motivations, the external regulation - baby’s health subscale representing a fundamentally different and independent breastfeeding motivational aspect only loosely linked to the other motivations.

Pearson correlations examined the associations between breastfeeding motivation subscales and background variables (age, years of education, number of children, and number/weight of babies born). With the exception of the negative correlation between identified regulation - maternal self-perception and maternal age at T2 ($r = -0.16, p < 0.05$), the correlations were non-significant.

In order to examine the associations between breastfeeding motivation and actual behavior, women who breastfed at T2 and T3 were compared with those who stopped breastfeeding prior to T3 on the basis of their breastfeeding motivation scores at T2. Interestingly, the two groups did not differ in any of the six motivation subscales ($p > 0.05$). This finding suggests that the SDT claim that a link exists between motivation and persistence of an activity (Sheldon and Krieger, 2007; Patrick et al., 2007) is not confirmed in the context of breastfeeding, probably due to the overwhelming social demand for breastfeeding, which disregards subjectivity. A series of Pearson correlations examined the associations between breastfeeding motivation subscales and maternal well-being (see Table 3). Autonomous breastfeeding motivations were positively related to positive aspects of maternal well-being (positive affect, life satisfaction) and self-efficacy. Controlled breastfeeding motivations were positively related to negative aspects of well-being (negative affect, post-partum depression) and negatively related to maternal self-efficacy, in line with SDT (Ryan and Deci, 2000b; Ng et al., 2012). Thus, although SDT was not associated with actual breastfeeding behavior, it was linked to maternal state of mind. Contrary to SDT, however, identified regulation - maternal self-perception, which reflects a relatively autonomous breastfeeding motivation, was positively related to negative aspects of well-being (negative affect, post-partum depression). Therefore, women who breastfeed out of extrinsic motivations, even if they are autonomous motivations, may experience more negative emotions and symptoms of post-partum depression, and fewer positive emotions; they may also feel less competent.

Finally, a series of Pearson correlations examined whether attachment as measured during pregnancy (T1) predicted motivation to breastfeed at T2 and T3 (see Table 3). Rather surprisingly, avoidant attachment did not predict breastfeeding motivation at either time, the sole exception being a negative relationship with the motivation to breastfeed due to intrinsic regulation - breastfeeding enjoyment (T3). In contrast, anxious attachment predicted the majority of the external breastfeeding motivations, including some of the autonomous breastfeeding motivations. In general, breastfeeding motivation seems to be affected by anxious attachment irrespective of the level of autonomy attached to the motivation.

### 6. Discussion

This paper examines breastfeeding motivation among women who are raising their children in an era in which women who do not breastfeed are perceived as endangering their children and as being not “good mothers” (Knaak, 2010; Marshall et al., 2007). In this climate, when the concepts of choice and decision-making with regard to breastfeeding appear to be irrelevant, and women breastfeed whether they feel connected to breastfeeding or not (Burns et al., 2010), the issue of breastfeeding motivation becomes far more pressing. The findings support the SDT’s theoretical structures (Ryan and Deci, 2000b) for breastfeeding motivations in two distinct samples. In line with SDT (Ryan and Deci, 2000a), breastfeeding motivations in Study II were found to be related to maternal well-being, self-efficacy, and attachment in various configurations. At the same time, the findings point to the uniqueness and complexity of maternal identity as reflected in the archetypal maternal act of breastfeeding.

The current findings from Study II highlight how autonomy is central to well-being. As predicted by SDT, the most autonomous motivation (reflected in intrinsic regulation - breastfeeding enjoyment) was associated with positive aspects of maternal well-being, while controlled motivations were correlated with maternal...
distress. Thus, breastfeeding out of extrinsic motivations leads to a significant decline in the happiness of the breastfeeding woman. These findings closely correspond to those of other studies examining SDT performance in other areas (e.g., Barbeau et al., 2009; Silva et al., 2010). Contrary to SDT, however, breastfeeding driven by a desire to enhance maternal self-perception that stems from identified regulation, which is an autonomous breastfeeding motivation (Deci and Ryan, 2008) was associated with negative aspects of maternal well-being.

This finding may be interpreted in the context of current social expectations, frequently embodied in the tenet of maternal responsibilities. Professionals assisting women after childbirth should be aware of the state of mind of women dealing with limiting expectations, pressures, and needs (Cooke et al., 2007; Scavenius et al., 2007; Schmied et al., 2011). In such an atmosphere, the internalization process might leave a deeper and more negative imprint than some of the voices that remain external to the self (such as controlled breastfeeding motivations).

This climate of intensive mothering may also explain two of the other surprising findings revealed in Study II. One was the elucidation of why anxious attachment forms such a dominant and integral part of both autonomous and controlled breastfeeding motivations, i.e., breastfeeding may symbolize the wish to meet the maternal “gold standard” and the fear of failing in the face of these social expectations. The other surprise was that in an era in which the overwhelming majority of women breastfeed, their need to comply with social norms does not seem to be affected by their sense of autonomy, i.e., no differences were found between breastfeeding mothers and those who stopped breastfeeding with respect to the motives which drove them to start breastfeeding in the first place. Neither of these two findings is consistent with SDT (Ryan and Deci, 2000a).

6.1. Limitations

The studies presented in this paper have a number of limitations. The first limitation relates to the sample. Firstly, since this is a longitudinal study that requires ongoing cooperation, which recorded only breastfeeding women, the sample size at T3 was relatively small. Additionally, although participants in Study II were recruited from public health facilities, whose services are utilized by 80% of Israeli women, the samples in both studies tended to be more educated than the average Israeli. Also, while refusal and dropout rates are common in longitudinal studies, they must be taken into account. Similarly, although the breastfeeding motivation scales were found to be valid and reliable, they are likely not to be free of social desirability processes. Finally, three additional factors should be considered: moderate internal consistency of two subscales, the fact that the two most autonomous motivations combine in Study I’s principal factor analysis into one, and the fact that one of the subscales was comprised of two items. For further validation and refinement of the Breastfeeding Motivation Scale, future studies may add some items that enable a more accurate and reliable scale. The scale should also be examined among representative populations, in larger sample size, and from additional varied countries and cultures.

7. Conclusion

Our findings of these studies emphasize the centrality of motivation in the subjective experience of women who breastfeed. The complex relationship between breastfeeding motivations and key maternal variables illustrates the heavy price often paid by women who breastfeed out of extrinsic motivations, even if these motivations are autonomous. Professionals assisting women after childbirth should be aware of the state of mind of women dealing with conflicting expectations, pressures, and needs (Cooke et al., 2007; Scavenius et al., 2007; Schmied et al., 2011). In the current reality, in which women who do not breastfeed are frequently perceived by professionals and the public alike as having failed in their primary maternal role (Law, 2000; Ryan et al., 2010; Schmidt, 2008), it is important to understand the heavy price these mothers pay, and seek ways to minimize them.

### Table 3
Correlations between the breastfeeding motivation subscales at T2 and T3 and maternal dominant variables (Study II).

<table>
<thead>
<tr>
<th>Time 2</th>
<th>F1a</th>
<th>F1b</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive affect</td>
<td>0.19***</td>
<td>0.08</td>
<td>–0.02</td>
<td>–0.14*</td>
<td>–0.02</td>
<td>0.06</td>
</tr>
<tr>
<td>Negative affect</td>
<td>–0.05</td>
<td>0.01</td>
<td>0.23***</td>
<td>0.14*</td>
<td>0.04</td>
<td>–0.03</td>
</tr>
<tr>
<td>Post-partum depression</td>
<td>–0.03</td>
<td>–0.01</td>
<td>0.16*</td>
<td>0.15*</td>
<td>0.11</td>
<td>–0.04</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>0.15*</td>
<td>0.16*</td>
<td>0.01</td>
<td>–0.01</td>
<td>0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>Maternal self-efficacy</td>
<td>0.22***</td>
<td>0.14*</td>
<td>–0.00</td>
<td>–0.17**</td>
<td>0.01</td>
<td>0.03</td>
</tr>
<tr>
<td>Anxious attachment (T1)</td>
<td>0.09</td>
<td>0.14*</td>
<td>0.34***</td>
<td>0.21***</td>
<td>0.15*</td>
<td>–0.06</td>
</tr>
<tr>
<td>Avoidant attachment (T1)</td>
<td>–0.05</td>
<td>–0.07</td>
<td>–0.03</td>
<td>0.06</td>
<td>–0.02</td>
<td>0.02</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Time 3</th>
<th>F2a</th>
<th>F2b</th>
<th>F3a</th>
<th>F3b</th>
<th>F4a</th>
<th>F4b</th>
<th>F5a</th>
<th>F5b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive affect</td>
<td>0.21*</td>
<td>0.16</td>
<td>0.07</td>
<td>–0.20*</td>
<td>–0.15</td>
<td>–0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative affect</td>
<td>0.04</td>
<td>0.09</td>
<td>0.20*</td>
<td>0.14</td>
<td>0.23**</td>
<td>0.22**</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>Post-partum depression</td>
<td>0.05</td>
<td>0.04</td>
<td>0.19*</td>
<td>0.14</td>
<td>0.22*</td>
<td>0.03</td>
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</tr>
<tr>
<td>Life satisfaction</td>
<td>0.17*</td>
<td>0.10</td>
<td>–0.07</td>
<td>–0.08</td>
<td>–0.13</td>
<td>0.09</td>
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<tr>
<td>Maternal self-efficacy</td>
<td>0.26**</td>
<td>0.27***</td>
<td>0.07</td>
<td>–0.17*</td>
<td>–0.05</td>
<td>0.14</td>
<td></td>
<td></td>
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<tr>
<td>Anxious attachment (T1)</td>
<td>0.07</td>
<td>0.14</td>
<td>0.28***</td>
<td>0.25**</td>
<td>0.27***</td>
<td>–0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidant attachment (T1)</td>
<td>–0.21*</td>
<td>–0.13</td>
<td>–0.05</td>
<td>0.03</td>
<td>–0.06</td>
<td>0.02</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: p < 0.05, *p < 0.01, ***p < 0.001. Abbr: M – Mean, SD – Standard deviation, a – Internal consistency. T1 – Third trimester of pregnancy (25–42 weeks of pregnancy). T2 – Postpartum; eight weeks after birth. T3 – Postpartum; five months after birth.
References


