The Effect of Lullabies on the Mother and on Her Relationship with the Baby: an Exploratory Study

Eduardo Sá[1]* and Ana Torres[1,2]

[1]BabyLab's Researcher, University of Coimbra and ISPA, Portugal

[2]Master's Degree in Clinical and Health Psychology from the University of Coimbra, Portugal

*Corresponding author: Dr. Eduardo Sa, Professor, BabyLab's Researcher, University of Coimbra and ISPA, Portugal, Email: geral.babylab.fpceuc@gmail.com

Abstract

This study will focus on the differences regarding the mother's mental health, wellbeing, self-esteem and depressive symptomatology on the postpartum period and its value in the mother-baby bond, considering lullabies as its mediator after the birth. For this purpose, an exploratory study was carried, using a protocol which included:
i) A socio-demographic questionnaire.
ii) The Edinburgh Postnatal Depression Scale (EPDS).
iii) The Portuguese version of the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS).
iv) The Rosenberg's Self-Esteem Scale (RSE).
v) The Postpartum Bonding Questionnaire (PBQ).

The sample included 471 mothers whose children showed ages between 4 and 40 weeks: 312 mothers said they sang their babies lullabies invented by themselves and 377 mothers sang in order to calm/relax their babies, it is the case that 227 mothers referred their babies actually calmed down listening to it. Despite the fact that singing their babies lullabies reveal higher self-esteem and an increased mother-baby bond, these results weren't significant considering a significance level of 5%. However, more variables were studied. Thus, it was concluded that mothers who sang or placed music for the baby during pregnancy, mothers who were already very experienced in caring for babies, and mothers who, after the baby was born, had the support of their family and father of the baby, showed improved levels in the variables under analysis. This study has practical implications for all health professionals who deal with recent mothers and babies.

Keywords: Lullabies; Maternal well-being; Maternal self-esteem; Postnatal depression; Mother-Baby Bond

Introduction

In all world societies, it is common for mothers to sing to their babies. Lullabies intend, in different cultures, to convey traditions among generations, besides that lullabies try to help mothers expressing their own feelings [1]. This is a relevant practice, not only for its' immediate consequences, such as, pleasure increment, reduction of the discomfort and baby sleep promotion, but also for its consequences for the further development of the baby's self-regulation of abilities, as well as for the promotion of the baby's social skills [2]. According to the evolutionist theories, this practice has evolved from mothers, a speech style usually used by mothers to communicate with their babies, which comprise exaggerated melodies and frequent repetitions and acts as a tranquiliser mechanism, which promotes the mother-baby relationship.

The mother's singing brings about changes in the baby, essentially concerning their excitement level and response capability. However, to date, there are few pieces of research on the benefits of singing for mothers themselves [1]. In the past decade, a series of studies, observation, and intervention found associations between singing and the improvements in mental health, well-being and quality of life of different populations [3,4]. In this regard, the study of recent mother's mental health is very important, since there is a fairly high prevalence of conditions such as postnatal depression, which has harmful effects on the mother-baby relationship and on the child development [5].

In Portugal, literature regarding lullabies, particularly concerning its impact on the mother and the baby's lives and the relation established between both after the birth, is very scarce, as well as the research carried out in this context. In this regard and based on the information gathered through international research, it is necessary to investigate the issue in the context of the Portuguese reality. Therefore, based on the variables gathered on the literature, the goal is to study the differences regarding depression symptoms, well-being and self-esteem of the mothers who are in the habit of singing their babies lullabies, as well as how can these influence the mother-baby relationship in the first months after labour. The relevance of conducting this exploratory study is to provide bases, readings which can serve as basis for further research nationwide; furthermore, it is expected the results obtained provide a series of practical implications for healthcare providers who deal with recent mothers who, faced with the challenge of motherhood, show unbalances on their emotional states. Thus, it is important to pinpoint interventions and psychosocial practices which can help these mothers in order for them to live a positive and healthy experience of motherhood.

Method

Participants

471 women, between 17 and 47 years old, have been considered (mean=33.4; sd=4.4). The majority said to be Portuguese (98.3%), live in the North of Portugal (37.4%), hold higher education (82.2%), be employed (86.2%) and be married (58.0%). The sample was gathered through an online questionnaire having into account the following criteria of inclusion: i) be a woman; ii) have a baby between 4 and 40 weeks old (inclusive).

Material

The following instruments have been used: Sociodemographic questionnaire,[1] Edinburgh Postnatal Depression Scale,[2] Portuguese version of the Warwick-Edinburgh Mental Wellbeing Scale,[3] Rosenberg's Self-Esteem Scale,[4] and Postpartum Bonding Questionnaire[5].

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[1]The sociodemographic questionnaire was idealized exclusively for the present study. The study sought to gather sociodemographic characteristics of the mother, data regarding the pregnancy, the birth, the postpartum period, the mother's previous train in baby care, information concerning the baby him/herself, analysing, more concretely, the question of the presence of lullabies in the everyday life of both of them.

[2] The Portuguese version of the Edinburgh Postnatal Depression Scale - translated and validated by Augusto *et al*. for the Portuguese population. (1996, p. 140), from the Edinburgh Postnatal Depression Scale (EPDS), by Cox et al. [6] is an auto-response questionnaire which evaluates the intensity of the depressive symptoms in the previous period of seven days and has been used in different studies during pregnancy and postpartum period [7,8,9]. The higher the final result, the higher the probability of women in manifesting postpartum depression, an overall value of 12 or more shows the probability of manifesting depression but not its seriousness [9].

[3] *Warwick-Edinburgh Mental Well-Being Scale* (WEMWBS: NHS Health Scotland, University of Warwick & University of Edinburgh 2007 - Portuguese version, Fernando Pessoa University & Town Council of Viana do Castelo, [10] is a self-report scale, which comprises 14 items which evaluates the well-being hedonic dimension (happiness, average life satisfaction) and the eudaimonic one (positive performance). Its different items reflect feelings and thoughts, of which the participants have to answer according to their experience, in the course of the last two weeks. Higher results are associated with better mental well-being [11].

[4]Rosenberg's Self-Esteem Scale (RSE) - translated and adapted for the Portuguese population by Simões e Lima [12], from the Rosenberg Self-Esteem Scale, by Rosenberg [13] - is an auto-response questionnaire which seeks for a global self-esteem unidimensional measure. The total punctuation of the scale can vary between 10 and 40 points, being the higher the punctuation, the higher the individual's self-esteem.

Statistical Procedure

The 22.0 version of the SPSS has been used. The significance level in order to reject the null hypothesis was established in p≤.05. The Cronbach's alpha coefficient, parametric and nonparametric tests and correlations were applied. The normality distribution has been accepted for the samples with a dimension higher than 30, assuming the central limit theorem.

Results

The present study' main purpose was to analyse the existence of the positive consequences of lullabies, essentially for the mother. Although some of the results obtained aren't statistically significant, it was possible to draw the following conclusions:

a. The majority of the mothers said they sang songs/melodies invented by them to calm/relax the baby, put the baby to sleep, relax the baby or play with their baby.

b. The majority of the babies calms down with their mothers' lullabies. A part of them stays tuned, laughs or falls asleep.

c. Mothers who sing to their babies show higher self-esteem levels and a healthier mother-baby bond. Mothers, who do that *frequently*, have optimized self-esteem levels.

d. Mothers who sing to the baby during pregnancy show higher self-esteem levels, minor symptomatology and higher well-being (**). They also show a healthier mother-baby bond (**).

e. Mothers who turned on music for the baby to listen to it during pregnancy show higher levels of well-being (**), minor depressive symptomatology and a healthier mother-baby bond (**).

f. The study also showed mothers *very experienced* in baby care reached higher levels of well-being (**); Mothers *frequently* supported by their babies' fathers showed minor depressive symptomatology (**); Lastly, mothers who counted on their families' support

showed higher self-esteem and well-being levels (**), as well as an optimized mother-baby bond (**).

g. Positive moderate correlations between the mother's depressive symptomatology and the damaged baby bond have been observed (r=.554) (***), namely, the higher the depressed level of the mother, the more damaged the relationship established with the baby. The same occurs between the parent well-being and parent self-esteem (r=.691) (***), in other words, mothers with higher self-esteem levels also show higher well-being levels. Negative moderate correlations between maternal depression and self-esteem have been observed (r=-.612) (***), which means that the more depressed the mother is, the lesser is her self-esteem. This also occurs between the mother's well-being and mother-baby bond levels (r=-.533) (***), in other words, a more damaged mother-baby bond corresponds to minor maternal well-being. A weak negative correlation between the mother's self-esteem and the relationship with the baby has been observed (r=-408) (***), which reflects that mothers with higher self-esteem show a healthier bond with the baby. Lastly, the study highlights a strong negative correlation between maternal depression and well-being (r=-.749) (***), wherefore, more depressed mothers show minor well-being levels (Table 1).[6]

(**) p ≤.05; (***) p ≤.001

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[5]The Portuguese version of the Postpartum Bonding Questionnaire - adapted and validated for the Portuguese population by Nazaré *et al.* [14] from the original *P*ostpartum Bonding Questionnaire (PBQ), by Brockington *et al.* [15]- is an auto-response questionnaire which evaluates the existence of disturbances in the relationship the parents have established with their baby. The questionnaire's total result varies between 0 and 60 points, being the higher the final result, the more damaged is the mother and baby bond [14].

[6]The reading and interpretation of the results must include the limitations of the research. Firstly, it must be stated the cross-sectional design of the research makes conclusions concerning the cause-effect-relations between variables impossible since these relations are bidirectional. Secondly, the fact that the research samples consist solely of mothers, most of whom have higher education. Consideration should be given to the type of data collection used, an online questionnaire which, owing to a self-selection effect, could have biased the results. Another point to consider is the fact that only self-reported instruments were used, without a parallel objective measurement. It should be noted that only mothers with babies between 4 and 40 weeks of age were considered. Therefore, we don't know if there would be any other associations if the study had considered different periods from the established ones. Last, of all, the study excels the large discrepancy observed between mothers who said they sang for the baby (n=452) and those who said they didn't (n=19).

Main Results
Information regarding motherhood experience
Planned pregnancy
402 women (85.4%) have planned their pregnancy
Type of pregnancy
348 women (73.9%) had a normal pregnancy
123 women (26.1%) had a risk pregnancy
Family support during and after pregnancy
439 women (93.2%) had family support during pregnancy
433 women (91.9%) had family support after the baby was born
The mother sang or turned on music for their babies during pregnancy
308 women (65.4%) sang to their baby
363 women (77.1%) turned on music for the baby to listen
Delivery and complications
186 women (39.5%) had a eutocic delivery
285 women (60.5%) had a difficult confinement
73 women (15.5%) had delivery complications during the delivery
53 women (11.3%) had complications during the postpartum
Maternity leave
244 women (51.8%) are on maternity leave
Number of children
338 women (71.8%) have only a child
117 women (24.8%) have two children
13 women (2.8%) have three children
3 women (0.6%) have four children
Previous train in baby care
146 women (31.0%) consider they *lack experience*
248 women (52.7%) consider they are *less experienced*
77 women (16.3%) consider they are *very experienced*
Information regarding the baby
Baby gender
228 babies (48.4%) are girls
243 babies (51.6%) are boys
Baby age
Varies between 4 and 40 weeks old (M=22.99)
Birth (weeks of pregnancy)
70 babies (14.9%) were born prematurely
401 babies (85.1%) were born between 38 and 42 weeks old
Information regarding the baby's father
457 women (97.9%) live with their baby's father
1 woman (0.2%) say the relationship with her baby's father is *very bad*; 337 women (71.5%) say the relationship with her baby's father is *very good*
2 women (0.4%) say they don't feel supported by their baby's father; 387 women (82.2%) feel *frequently supported*
Mother's relationship with the baby
Hours/ day they spend together
22 women (4.7%) spend 0 to 5 hours a day with their babies; 292 women (62.0%) spend 21 to 24 hours a day with their babies
Be in the habit of singing lullabies to the baby
19 women (4.0%) don't sing to their babies
452 women (96.0%) sing to their babies: 27 women (6.0%) sing frequently, 243 women (53.8%) sing sometimes and

182 women (40.3%) sing rarely

Type of songs
312 women (69.0%) sing songs/melodies invented by them
308 women (68.1%) sing traditional lullabies
268 women (59.3%) sing melodies (songs without lyrics)
172 women (38.1%) sing the songs the baby listened to during pregnancy
155 women (34.3%) sing current songs
2 women (0.4%) sing children's songs
4 women (0.8%) sing religious songs
1 woman (0.2%) sings songs from Alentejo
1 woman (0.2%) sings Portuguese traditional songs
Circumstances in which women sing
377 women (83.4%) sing to calm/relax their babies
375 women (83.0%) sing to put their babies to sleep
251 women (55.5%) sing while they play with their babies
126 women (27.9%) sing while they feed their babies
5 women (1.1%) sing while they bath their babies
3 women (0.6%) sing while they change their babies nappy
1 woman (0.2%) sings while she dressed the baby
1 woman (0.2%) sings during car trips
Baby's behavior with respect to the lullaby
227 babies (50.2%) calm themselves down
133 babies (29.4%) stay aware/are surprised
35 babies (7.7%) laugh
55 babies (12.2%) fall asleep
2 babies (0.4%) cry

Are there any differences in self-esteem, well-being, depressive symptomatology and mother-baby bond depending on the practice of singing to the baby?

Mothers who sing to their babies show higher self-esteem levels (M=34.05; SD=5.27 *vs*. M=32.84; SD=5.09); However these values aren't statistically significant [t(469)= .980, *p*= .327]

Mothers who sing to their babies show a healthier mother-baby bond (M=4.90; SD=4.38 *vs*. M=5.42; SD=6.72); However, these values aren't statistically significant [U= 3987, *p*= .595]

Are there any differences in self-esteem, well-being, depressive symptomatology, and mother-baby bond levels regarding the frequency in which the mother sings during the day to the baby?

a.   Mothers who sing to the baby *frequently* show higher levels of well-being (M=50.52; SD=8.60 *vs*. M=50.09; SD=8.00 *vs*. M=50.79; SD=9.43); However these values aren't statistically significant [H(2)= 1.117, *p*= .572]

b.   Mothers who *frequently* sing to their babies show higher self-esteem levels (M=34.44; SD=4.126 *vs*. M=33.65; SD=5.333 *vs*. M=34.53; SD=5.320); However these values aren't statistically significant [F(2,449)= 1.556, *p*= .212]

Are there any differences in self-esteem, well-being, depressive symptomatology, and mother-baby bond according to the fact the mother sang to the baby during pregnancy?

a.   Mothers who sang to their babies during pregnancy show significantly higher levels of well-being [t(469)= 2.415, *p*= .016 (M=51.12; SD=8.66 *vs*. M=49.11; SD=8.41)]**

b.   Mothers who sang their babies during pregnancy show higher self-esteem levels (M=34.15; SD=5.27 *vs*. M=33.72; SD=5.27); However these values aren't statistically significant [t(469) = .834, *p*= .405]

c.   Mothers who sang their babies during pregnancy show miner levels of depressive symptomatology (M=7.58; SD=4.36 *vs*. M=7.91; SD=4.11); However these values aren't statistically significant [t(469)= -.812, *p*= .417]

d.   Mothers who sang to their babies during pregnancy show a significantly healthier mother-baby bond [t(469)= -2.337, *p*= .020; (M=4.57; SD=4.07 *vs*. M=5.58; SD=5.14)]**

Are there any differences in self-esteem, well-being, depressive symptomatology, and mother-baby bond levels according to the fact the mother turned on music to the baby during pregnancy?

a.   Mothers who turned on music to their babies during pregnancy show significantly higher levels of well-being

[t(469)= 2.255, *p*= .025; (M=50.91; SD=8.58 *vs.* M=48.79; SD=8.59)]**
b.   Mothers who turned on music to their babies during pregnancy show minor levels of depressive symptomatology (M=7.66; SD= 4.32 *vs.* M=7.82; SD=4.13); However, these values aren't statistically significant [t(469)= -.359, *p*= .720].
c.   Mothers who turned on music to their babies during pregnancy show a significantly healthier mother-baby bond [t(469)= -2.691, *p*= .007; (M=4.62; SD=4.45 *vs.* M=5.94; SD=4.50)]**

Are there any differences in self-esteem, well-being, depressive symptomatology, and mother-baby bond according to the fact that the pregnancy had been planned?

a.   Mothers who planned their pregnancy show higher well-being levels (M=50.73; SD=8.607 *vs*. M=48.64; SD=8.554); However these values aren't statistically significant [t(469)= 1.866, *p*= .063]
b.   Mothers who planned their pregnancy show minor levels of depressive symptomatology (M=7.57; SD= 4.19 *vs.* M=8.43; SD=4.73); However these values aren't statistically significant [t(469)= -1.560, *p*= .119].
c.   Mothers who planned their pregnancy show higher self-esteem levels (M=34.19; SD=5.20 *vs.* M=32.91; SD=5.54); However these values aren't statistically significant [t(469)= 1.865, *p*= .063]

Are there any differences in the mother-baby bond according to the type of delivery?

Mothers who gave birth by normal delivery show a healthier mother-baby bond (M=4.56; SD=3.60 *vs.* M=5.15; SD=4.98); However these values aren't statistically significant [t(469)= -1.395, *p*= .164]

Are there any differences in self-esteem, well-being, depressive symptomatology and mother-baby bond having into account the baby are the mother's first child?

a.   Mothers who have only a child show higher well-being levels (M=50.53; SD=8.70 *vs.* M=50.15; SD=8.42); However these values aren't statistically significant [t(469)= .429, *p*= .668]
b.   Mothers who have only a child show minor levels of depressive symptomatology (M=7.49; SD= 4.20 *vs.* M=8.23; *SD*=4.43); However, these values aren't statistically significant [t(469)= -1.695, *p*=.091].
c.   Mothers who have only a child show higher self-esteem levels (M=34.26; SD=5.32 *vs.* M=33.34; SD=5.08); However these values aren't statistically significant [t(469)= 1.720, *p*= .086]
d.   Mothers who gave birth by normal delivery show a healthier mother-baby bond (M=4.82; SD=4.42 *vs.* M=5.19; SD=4.67); However, these values aren't statistically significant [t(469)= -.808, *p*= .420]

Are there any differences in self-esteem, well-being, depressive symptomatology and mother-baby bond having into account the mother's previous experience regarding baby care?

a.   Mothers who say they *lack experience* show higher levels of depressive symptomatology M=8.27; SD=4.27 *vs.* M=7.35; SD=4.13 *vs.* M=7.70; SD=4.67); However these values aren't statistically significant [F(2,468)= 2.153, *p*= .117]
b.   Mothers who say they are *very experienced* show significantly higher well-being levels [F(2,468)= 5.324, *p*=.005; (M=48.53; DP=8.77 *vs.* M=51.15; DP=8.31 *vs.* M=51.69; DP=8.87)]**
c.   Mothers who say they are v*ery experienced* show higher self-esteem levels (M=33.39; SD=5.51 *vs.* M=34.44; SD=5.10 *vs.* M=33.37; SD=5.26); However these values aren't statistically significant [F(2,468)= 1.910, *p*= .149]
d.   Mothers who say they *lack experience* show a more damaged mother-baby bond (M=5.16; SD=4.91 *vs.* M=4.86; SD=3.95 *vs.* M=4.66; SD=5.26); However, these values aren't statistically significant [H(2)= 4.050, *p*= .132]

Are there any differences in self-esteem, well-being, depressive symptomatology, and mother-baby bond levels according to the support provided by the baby's father?

Mothers who feel *frequently* supported by their babies' father show significantly minor depressive symptomatology levels [H(3)= 23.173, *p*= .000; (M=10.50; SD=6.36 *vs.* M=10.11; SD=4.37 *vs.* M=9.58; SD=4.33 *vs*. M=7.27; SD=4.15)]**

Are there any differences in self-esteem, well-being, depressive symptomatology, and mother-baby bond levels according to family support?

a.   Mothers who count on their families' support show significantly higher levels of well-being [t(469) = 2.708, *p*= .007; (M=50.74; SD=8.50 *vs.* M=46.82; SD=9.19)]**
b.   Mothers who count on their families' support show significantly higher self-esteem levels [t(469) = 3.050, *p* = .002; (M=34.22; SD=5.20 *vs.* M=31.53; SD=5.45)]**
c.   Mothers who count on their families' support show minor depressive symptomatology levels (M=7.53; SD= 4.05 *vs.* M=9.55; SD=6.07); However these values aren't statistically significant [t(39.946)= -2.015, *p*= .051]
d.   Mothers who count on their families' support show a healthier mother-baby bond [t(469)= -2.616, *p*= .009; (M=4.76; SD=4.37 *vs.* M=6.74; SD=5.42)]**

Are there any differences in the mother-baby bond according to the fact the mother is on maternity leave?

The mothers who are on maternity leave show more damaged mother-baby bond levels (M=5.19; SD=4.92 *vs.* M=4.63;

SD=3.96); However these values aren't statistically significant [t(469)= 1.340, *p*= .181]	
Are there any differences in the mother-baby bond according to the number of hours both the mother and the baby spend together?	
The mothers who spend less time with their babies show more damaged of mother-baby bond levels (M=5.41; SD=3.16 *vs*. M=3.65; SD=2.48 *vs*. M=4.94; SD=4.31 *vs*. M=4.42; SD=2.94 *vs*. M=5.15; SD=5.01); However, these values aren't statistically significant [H(4)= 4.562, *p*= .335]	
Are there any correlations between the punctuations obtained in the four scales *(ROS, WEMWBS, EPDS e PBQ)?*	
a.	Significant strong negative correlation between EPDS and WEMWBS scales (r= -.749, p=.000)[***]
b.	Significant moderate negative correlation between EPDS and ROS scales (r= -.612, p=.000)[***]
c.	A significant moderate positive correlation between EPDS and PBQ scales (r=.554, p=.000)[***]
d.	A significant moderate positive correlation between WEMWBS and ROS scales (r=.691, p=.000)[***]
e.	Significant moderate negative correlation between WEMWBS and PBQ scales (r= -.533, p=.000)[***]
f.	Significant weak negative correlation between ROS and PBQ scales (r= -.408, p=.000)[***]

Table 1: Summary of the main results.
[**] p ≤.05; [***] p ≤.001

Discussion and Conclusion

Lullabies represent a key mediator in the mother-baby relationship. Lullabies serve, through its symbolic content (bogeyman *vs.* guardian angel), for the mother to mobilize and express her most remote and phantasmal fears and represent these in a plot which, integrated in a melodic structure, not only allows her to exorcise them but also to transform them in a binding motif which brings them close and bonds them.

The cross-cultural and cross-generational dimension of lullabies makes them to be present in different latitudes and cultures, transforms lullabies in an key instrument which forms the link between the antenatal period and the postnatal period and, mainly, between the idealized dimensions and the infancy's phantasmal collections and the identifications in a bascule movement which, through fantasy, takes the baby from the mother's unconscious to her familiar romance. Lullabies are transversal to mothers from different ages, beliefs, cultures or academic qualifications. Lullabies seem to represent an essential content which fulfils the phantoms and the pregnancy idealizations in an imaginary baby. Lullabies mobilize the mother to better maternal self-esteem, a better bond, and higher well-being, serving as the "antidote" to the depressive nature content which could emerge with the pregnancy and the baby.

Lullabies and the mothers' motherhood experience seem to be essential in the way the mother binds herself with her baby and how she gets more significant self-esteem levels and puerperal depression basal indices. Lullabies also represent, for the baby, a mediator of the emotions with a Para-excitatory impact in his/her development, representing - due to the binary rhythm which characterizes them and their melodic content - a key humour stabilizer which anticipates and prepares the baby to the mother's caregiver function when it comprises rhythms, routine and rules and prepares the baby for the relationship.

Lullabies seem to be the precursors of the mother and baby language. Lullabies use music as a true Tower of Babel, previous to language, which prepares the baby to assume, learn and use maternal language. Following the mother-baby language example, lullabies seem to assume themselves as an instrument which seems to spy the mother's fears and exacerbate the positive emotions which serve calm the maternal resistances to motherhood and which stimulate the bonding. Lullabies also seem to be a key precursor where the abstract and the symbolic connect and enhance themselves in order to comprise emotions and affections and convey them a metrical function which makes the baby metabolize emotional life and transform change into thought. Lullabies seem to be a key indicator in the evaluation of the mother's mental health resources, during pregnancy and motherhood, being a key instrument at the service of motherhood.

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