

## *Maternal responses to infant crying: Cultural differences, context, newborns\**

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**Summary.** *Some authors have stressed universal features of neonatal crying and maternal responses, while others have stressed cultural specificity. This research compared maternal responses to neonatal crying, with 2 separate observations immediately after birth, using an observational grid. The efficacy of maternal behavior on infant crying was also compared. Subjects included 40 Italian, 20 Albanian and 20 Chinese mother-infant dyads in Italian hospitals. 20 additional Albanian dyads were observed in an Albanian hospital. Some meaningful differences in maternal behavior and infant crying were observed in the Italian hospitals, according to ethnicity, as well as between the Albanian dyads in Italian and Albanian hospitals. Over time, mothers tended to leave their infants in the crib less and increasingly pick them up in their arms and breastfeed them.*

**Keywords:** *infant crying, maternal responses, cultural differences.*

Maternal soothing of neonatal crying is one of the most prompt and universal behavioral expressions of maternal sensitivity to infant distress. Crying can be considered as a sign of asking for help, selected during the course of evolution in order to obtain safety and social interaction from infant caregivers. As Barr, Hopkins and Green (2000) stress, crying can be considered as a sign, a symptom and a signal and as such it has been studied over time.

\* Received: 6/12/2009 – Revision: 17/1/2010 – Accepted: 27/1/2011

Self-declaration of compliance with ethical standards: 1/5/2011

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*Rivista di studi familiari, 1/2011*

Considering crying as a symptom encouraged, in around the 1960s, a series of medical studies (Karelitz & Fisichelli; 1962). Physical, physiological and acoustic characteristics of crying were investigated in order to get a very early diagnosis of infants' health conditions. Studies were oriented towards a clinical approach, trying to detect spectrographic features of crying by infants with neurological sufferings, or by newborns at risk for sudden infant death, or by preterm babies. Clues for identifying disturbances and for possible interventions were investigated.

Another way to study crying as a communicative sign was developed by Wolf (1969) who considered infants, before any language acquisition and also before the possibility of intentionally modulating their crying, already able to use different kinds of crying, specific to their needs or problems, such as hunger, loneliness, rage or pain. These different kinds of crying can be interpreted by caregivers. Different types of crying, linked to specific needs, were subsequently denied (for a review see Gustafson, Wood, & Green, 2000).

All these studies considered crying as a universal form of behavior, modulated in an inborn way by an infant's internal condition, by illness or health. An infant crying peak during the second month of life, such as the one present in the Western world, was also identified among !Kung San babies, although the Kung San have a very different cultural context in terms of family and everyday life from that of the Western world (Barr, Konner, Bakeman, & Adamson, 1991).

Parental soothing interventions were also considered universal. Research studies by Papousek (Papousek & Papousek, 1990), considering crying as an aversive stimulus to be universally managed, attempted to explain the intuitive parental care which this stimulus activated.

Crying and caregivers' interventions are typically considered as evolutionary driven by attachment theory. In Bowlby's view (1969), there is a link between infant crying, as a request for help by the infant, and maternal sensitivity, which activates the behavior necessary for ensuring infant survival.

According to attachment theory, both the tendency to intervene and the modalities with which to intervene, ensuring for example proximity to the infant and infant soothability, are quite constant elements of a repertoire which both partners share. As a result of interventions depending on maternal sensitivity, different kinds of attachment emerge (Ainsworth, 1979; Belsky, Rovine, & Taylor, 1984). Variability, however, seems to be tied to maternal internal working models, mostly expressed in terms of the different timing of interventions.

From this perspective some differences were considered: the universal framework of reference was abandoned and infant crying and maternal soothing were interpreted within the relationship between the partners of the dyad.

The aversive nature of the crying stimulus can thus be considered as to be in the mind of the perceiver, who can use different means in order to stop it.

Some studies have tried to identify how different maternal interpretations of infant crying, and its origin, induce different maternal procedures in order to make crying stop (Gustafson & Harris, 1990). Different ways, of various efficacy, were examined: the use of the pacifier as compared to swaddling (Campos, 1989), or holding the infant in one's arms, touching it, talking to it, looking at the infant or feeding it (Richman, Miller & Levine, 1992), or vestibular-proprioceptive stimulation, which was compared to contact in neonate soothing (Korner & Thoman, 1972).

The book edited by Lester and Boukydis (1985) dedicated to infant crying tries to shed light on the complex triangular pattern of neonatal crying, the caregivers' perception and caregivers' interventions and opens the way to the interpretation of the different variables which seem to shape these phenomena.

Some practices, as for instance feeding the infant, are more or less effective depending on infant age (Barr & Elias, 1988) and whether breast feeding or not (Bernal, 1972).

What mothers do also depends on the reason why they believe an infant is crying. Research which considers infant crying in a constant setting, such as that of pediatric vaccinations, limits the mothers' causal attribution of the reason for crying, which is surely due to pain. This constant setting offers a way to better compare different maternal soothing methods. The setting of pediatric inoculation has been used, for instance, by Axia and Weisner (2002) and by Campos (1989). When different causal attributions were experimentally suggested, by Wood and Gustafson (2001), in a laboratory setting, they modified, to the same degree as did the acoustic characteristics of infant crying, the latency of maternal interventions.

Other studies have stressed that maternal interventions are tied to the context, not just to the causal attribution of crying. By context is meant the culture where mother and infant are living. Harkness and Super (1986) proposed the *ecological niche* as a concept explaining the set of variables which interact with infant development. This concept has been widely used in order to interpret how parental ideas and practices change according to cultural variations. Specific cultural strategies in order to obtain common ends were studied by LeVine (1988) in different cultural settings.

In order to evaluate cultural variables, that is intracultural variables (in an Italian sample of mothers), Axia and Weisner observed maternal interventions during their infant inoculations and interviewed mothers about their Home Cultural Ecology. The continuity of Infant Home Cultural Ecology, and the variables involved in it, were the best means of predicting the speed in infant soothability during vaccination.

Again in a common cultural setting, with subgroups of different ethnic background, van der Wal, van den Boom, Pauw-Plomp, and de Jonge

discovered a variety of soothing techniques reported by mothers. Some of them were also dangerous, to our Western thinking, like infant shaking. Culture influences mothers' soothing techniques as mothers do what they believe to be good and healthy according to their cultural premises.

Different soothing methods were ascertained in an Arabic country through a telephone survey of mothers, when their infants were about 12 weeks old (Abdulrazzaq, Al Kendi, & Nagelkerke, 2008). It emerged that infants are mainly soothed by breastfeeding, then, with decreasing frequency, by holding and carrying the infant in one's arms, by letting the infant suck on its thumb or finger, by herbal tea, by night bottle and by swaddling.

Cultural and social context influence maternal beliefs and behavior, but the immediate human context of those surrounding the mother-infant dyad can also suggest what to do, in order to make infant crying cease, or people on the spot can intervene directly. Care for the infant who is crying can also be offered by the people surrounding the mother, this is called "allocure". Again among the !Kung, often subject to study because in this hunting-gatherer culture the level of infant crying is very low and maternal intervention is very frequent, care is ensured not only by the mother, but also by other caregivers, who are almost always at hand. In almost one third of the crying episodes the mothers' intervention is integrated by allocure. (Kruger & Konner, 2010).

On the whole, the cultural differences in neonate parenting and also in soothing infant cries can be considered to be determined by two quite antithetical sets of rules. In "traditional" cultures, where infant survival is at risk (as in the above mentioned Kung), the latency for intervening is very short, adult intervention is immediate, while in Western cultures, where the main parenting task is the regulation of infants' emotions, interventions can be delayed, or the adult can even choose not to intervene at all (Stork, 1993).

Anthropologists have theorized and described the two kinds of parenting: in J. Liedloff's work, *The Continuum Concept* (1986) and then in the studies by Small (1999). Liedloff identified a parenting style typical of preindustrial cultures, such as the one used in Amazonia, where she did research, characterized by the prompt answering of infant calls, self-demand breastfeeding, the infant sleeping in the parents' bed, experiences of constant physical contact, as well as parental expectations that the infant be profoundly social and well pre-adapted to social contact. Parenting in the Western world, on the contrary, would presume, in an antithetical way, that infant crying can be ignored or an "anxious" response can be given to it.

Small (1999), on the other hand, identified cultures prone to "high" contact ("traditional" ones), or to "low" contact (Western ones), between the infant and its caregivers. In parenting cultures with "high" contact, there is physical proximity, in all its forms, between infant and caregiver. Cultures characterized by "low" contact permit infants to stay in playpens or infant

seats for extended time periods during the day and in their own separate beds during the night.

The relative efficacy on infant crying and the sleep of neonates (8-14 days old) and infants (5-6 and then 10-14 weeks) of these two different types of parenting was longitudinally studied by St. James Roberts and colleagues (St James-Roberts et al., 2006). The two groups of parents in London and Copenhagen, both breastfeeding and spontaneously practicing “low” or “high” contact, were identified by a questionnaire. Parenting modalities were spontaneously practiced and not manipulated. The study showed how different costs and benefits stem from these two types of parenting, while colicky crying bouts at 5 weeks of age, are unsoothable by both parenting practices.

What has been said until now has stressed the role of parental intervention, but surely the infant’s contribution to what happens cannot be ignored. One can suppose that persistent crying is not only influenced by maternal interventions, but also acts upon them, on the basis of the well-known principle of the circular causal relationship which dominates psychical life.

Most research studies use an experimental control to evaluate the types of soothing intervention utilized in a controlled observable setting, or use questionnaires and interviews to determine the types of maternal intervention adopted in a spontaneous setting. An ecologically valid observation of spontaneous interactions using a controlled observation tool would appear to be particularly useful.

The aim of this research is to compare different maternal soothing behavioral responses to infant crying and their efficacy on the neonate itself: dyads of different cultural groups acting in different contexts will be compared.

It is presumed that just after birth, when mother-child interaction is not yet structured, for primipara mothers, without the experience of a neonate as a child, the parenting rules prevailing in that culture will mostly act.

It can be hypothesized that mothers in the Western world, like Italian mothers, will use soothing techniques typical of a “low” contact culture, compared to mothers of other cultures like Albanian mothers (who can be hypothesized to be a traditional “high” contact culture ) and Chinese mothers (a culture about whose parenting approach to soothing there is no literature). The scanty literature pertaining to the Albanian culture stresses traditional roots in family rules, mostly regarding the role of women (Chinosi, 2004; Tirta, 2006).

The comparisons made in this study, in the context of an Italian hospital, will show the maternal behavior of immigrant women who in part share Italian norms and who are surely part of a common Italian hospital setting, with its specific rules and peculiarities.

On the other hand, observing Albanian mothers in their own country, where they have not experienced the uprooting of emigration, will permit a better understanding of what the soothing techniques prevailing in that culture are.

Repeating the observation, still in a hospital setting, some hours after the first observation, will allow the dynamic, interactive nature of the relationship between maternal and neonatal behavior to emerge.

We hypothesize that maternal interventions and neonatal crying vary according to the mothers' culture (Italian/Albanian/Chinese) and depending on the hospital context where they occur (Italy/Albania). Maternal soothing interventions can also be different over time (within 24 hours of childbirth as compared to within 48 hours) in connection with how infants react to maternal behavior. Some soothing interventions, theoretically recommended by the culture to which the mothers belong, may turn out not to be effective and could be subsequently abandoned.

We hypothesize that Italian mothers tend to show a more distal approach in soothing, for instance talking to the infant, and less high contact behavior, for instance holding the infant, touching and breastfeeding it, as compared to Albanian and Chinese mothers (hp.1). There are, however, no hypotheses suggested by the available literature about the behavior of Chinese mothers.

We hypothesize that the context of the Albanian hospital may promote in Albanian mothers a high contact behavior more frequently than the context of the Italian hospital would in Albanian migrant mothers (hp.2).

With respect to time, we hypothesize that high contact behavior will tend to increase in every group, as being more effective: this could lead maternal interventions to become somehow more homogeneous in the second observation, depending on their efficacy on infant crying.

## **Method**

### *Subjects*

Four groups of mother-infant dyads were examined:

- (a) 40 Italian mothers and children, in Italian hospitals, in Borgo S. Lorenzo and in Prato;
- (b) 20 Albanian mothers and children, in an Italian hospital, in Borgo S. Lorenzo;
- (c) 20 Chinese mothers and children, in an Italian hospital, in Prato;
- (d) 20 Albanian mothers and children, in an Albanian hospital, in Valona.

The Italian and immigrant (Albanian and Chinese) dyads were observed in Italy in Borgo S. Lorenzo and in Prato; the Albanian indigenous dyads in Valona. The neonates were healthy, born in the 24 preceding hours, at term,

and after more than 37 weeks of pregnancy. The mothers were all primipara, but there were many demographic differences (see Table 1). The Italian mothers were older, had fewer siblings and were more frequently unmarried or cohabitants than the mothers of other groups. Maternal jobs were also different. As for paternal schooling, Chinese fathers had reached lower academic levels than other fathers. Paternal jobs did not significantly differ among groups.

It is believed that these differences do not negate the validity of the comparisons as these demographic differences are precisely those which could be expected among primipara women of different ethnic groups and settings like these.

**Table 1 - Demographic characteristics of mothers and fathers**

	Italian Hospitals			Albanian Hosp.	<i>p</i>
	Italians	Albanians	Chinese	Albanians	
<b>Mothers</b>					
Age (years)	29 ± 3.5	25.8 ± 4.3	25.3±5.3	24.3±4.4	0.001
Siblings (n.)	0.7 ± 0.7	2.4 ± 1.2	1.4±1	2.9±1.6	0.001
Schooling (years of )	13.3 ± 3	12.25 ± 4.1	8,5 ± 2.2	13±2.8	0.001
<i>Status (%)</i> :					
married	83	100	95	95	0.001
not married or cohabitant	17	0	5	5	
<i>Employment (%)</i> :					
student	2.5	5	0	5	n.s.
housewife	5	60	10	60	0.001
blue-color	20	10	65	0	0.001
clerk	55	0	5	20	0.001
other employment	7.5	5	0	5	n.s.
merchant	0	0	15	0	n.s.
self-employed	7.5	10	5	5	n.s.
unemployed	2.5	10	0	5	n.s.
<b>Fathers</b>					
Schooling (years of )	11.18 ± 3.71	12.21 ± 3.82	8.79 ± 2.51	11.35 ± 3.87	0.001
<i>Employment (%)</i> :					
student	0	0	0	0	n.s.
blue-color	34	45	63	15	n.s.
clerk	26	0	0	5	n.s.
other employment	0	20	0	45	n.s.
merchant	2.5	0	27	10	n.s.
self-employed	35	35	10	15	n.s.
unemployed	2.5	0	0	10	n.s.

*Legenda: continuous variables: mean (± d.s.), for categorical variables: percentage (%). Each characteristic was analyzed by group using Kruskall Wallis K for continuous variables, or the Fisher test for categorical ones. The level of statistical significance (p) is cited.*

The hospital settings were different in Italy and Albania. While most of the newborns in Italy were precociously breastfed, that is within 2 hours after birth (67% Italian dyads, 70% Albanian dyads, 55% Chinese dyads) fewer Albanian neonates were precociously breastfed (20%, *p* <.001). This difference emerges notwithstanding the fact that in each hospital setting, precocious breastfeeding was recommended and rooming-in practiced. It

should be stressed that in Albanian hospitals no relatives or friends are admitted to visit mothers and neonates, while mothers are allowed to breastfeed neonates who are not their own.

### *Procedure and tools*

In an Italian hospital a preliminary observation of maternal soothing behavior was conducted. Additional categories of soothing behavior in addition to the ones identified in the literature were observed (Campos, 1989; Gustafson & Harris, 1990; Korner & Thoman, 1972; Richman, Miller, & Levine, 1992).

An observational grid of 25 co-occurring categories was created, 23 referring to mothers' behavior and 2 to infant crying.

Maternal behavior can be judged as expressing **proximal care**, obtained by holding the baby in one's arms, holding it in contact with the mother's body, breastfeeding and walking with the baby in one's arms. **Distal care** is expressed by any form of contact without whole body touching, that is caressing the face, belly or head, the touching of hands or feet. The **Verbal approach** indicates the mother speaking to the baby, while the **distal approach** refers to the mother looking at the baby, smiling at it, leaving the infant in the crib. It is possible to **rock the infant**, in a gentle way or shaking it energetically, and also **interventions to check the infant** are possible, such as changing infant position, checking diaper, uncovering the baby, covering it, and **using other people's help or aids**, like a pacifier, asking for a relative's help, ringing for nurses' help. It is also possible to **ignore infant crying**.

Neonates' behaviors are: to **stop crying** or **crying with different strength** (1 = fussing, 2 = low crying, 3 = high crying).

Co-occurring categories were used in order to describe multiple methods, such as for instance holding baby in arms and rocking gently. If categories of multiple methods had been created, an enormous number of categories would have resulted.

The observation, with paper and pencil, was made every 10 seconds, for a 3-minute period: there were 18 time intervals. On a check list the presence/absence of each maternal or infant behavioral category at each time interval was checked. The two observers were near enough to the mother-infant dyad to see without disturbing it. A paper pencil observation was chosen as videotaping was not viable in a setting such as the one studied. The agreement in observation between the two observers reached a  $K = .90$ .

The consent forms for observing the Albanian and Chinese mothers were written in Albanian and Mandarin Chinese: the first contact was established with the help of native Albanian and Chinese speakers as translators. Chinese mothers quite often denied consent and this could have affected the generalizability of collected data.

The observation was conducted immediately after the visit of the pediatrician, in order to refer to a constant antecedent condition which induced infant crying. The observation began when the infant started to cry.

Mothers and their neonate children were observed in the hospitals within 24 and 48 hours after birth. The first observation was chosen as showing a mother-infant interaction immediately after birth, as soon as possible, just after the mothers' recovery from delivery; the second observation was as late as possible after delivery, but before hospital discharge. As the repetition of the observation was intended to evaluate changes in mothers' interventions, the reliability over time was not checked.

### *Data analysis*

The frequency of every co-occurring category of maternal behavior (interventions) and infant behavior (presence of crying and intensity) in the 3-minute span was calculated. The frequencies were compared according to (a) time of observation (12 and 24 hours after birth, that is T1 and T2); (b) mother's ethnic group and culture (Italian, Albanian, Chinese) and (c) hospital context (Albanian dyads in Italian hospital and Albanian dyads in Albanian hospital in Valona).

The data pertaining to the 40 Italian dyads collected in two Italian hospitals, in Borgo S. Lorenzo and Prato (20 dyads were studied for comparison with Albanian dyads in Borgo San Lorenzo, and 20 dyads were observed in Prato for comparison with Chinese dyads) were compared. No differences emerged between the two Italian groups and the 40 Italian dyads were analyzed as a whole sample.

The role of culture and of context was evaluated in different steps. A first ANOVA for repeated measures was made, considering the culture of the dyads as between subjects factor, and the time of the observation as within subjects factor, and maternal and neonatal behavior as dependent variable. The first analysis compared the data of the dyads observed in the Italian hospitals.

A second ANOVA for repeated measures was made considering the hospital context (Italian/Albanian) as between subjects factor, and the time of the observation as within subjects factor, and the frequency of maternal and neonatal behavior as dependent variable. *P* level was determined at < .05. Where ANOVA showed a statistically significant effect of "culture" and/or the interaction between culture factor and time of observation factor, *a post hoc* analysis was made.

## **Results**

### *Maternal behavior*

Maternal soothing behavior will be illustrated (see Table 2, the first 4 columns). The soothing behavior will be described according to the way, defined as a macro category, that the mothers use: proximal, distal, checking, etc.

The most widespread soothing interventions are those of proximal care; it is not frequent for mothers to ignore crying or to turn to external assistance such as relatives or nurses. It is not uncommon for them to leave the infant in the crib and look at it, a behavior which suggests a still cautious involvement with the newborn. This same cautious approach comes out in rocking in a gentle way, the only kind of vestibular stimulation used at this age of the infant. There are few interventions checking the infant and no use of external aids.

*Differences in maternal behavior according to culture and time of observation.* The frequency of the maternal behavior of mothers in Italian hospitals (Italian, Albanian, Chinese mothers) at 24 and 48 hours after delivery (Time 1 and Time 2) was examined by an ANOVA for repeated measures, in order to evaluate the role of culture and the time of observation on mothers' soothing interventions.

As for **proximal care**, the frequency of the whole set of behaviors of this category increases over time independently of culture (see tab.2). Taking the infant in one's arms and breastfeeding it is more frequent in T2. Although there were no differences among cultures in the whole macrocategory of proximal care, there is a meaningful difference in the category "holds infant with bodily contact" (see Table 2). *Post hoc* analysis showed that this behavior is more frequent in Italian versus Albanian ( $p < .01$ ) and Chinese ( $p < .05$ ) mothers.

**Table 2: Frequency of mothers' behavior over 3 minutes according to culture and time of observation**

BEHAVIOR	Time	Italian mothers (mean±d.s.)	Albanian mothers (mean±d.s.)	Chinese mothers (mean±d.s.)	Effect by :		
					culture <i>F</i> (2,77)	time <i>F</i> (1,77)	interact. <i>F</i> (2,77)
<b>Proximal care:</b>	1	3.5 ± 2.7	3.3 ± 3.8	3.3 ± 2.9	0.71	6.03**	0.391
	2	5.3 ± 2.8	4.2 ± 3.3	4.4 ± 3.1			
takes infant in arms	1	9.7 ± 7.3	7.9 ± 8.2	8.9 ± 7.5	2.05	5.23*	0.404
	2	13.7 ± 6.1	10.2 ± 7.3	10.7 ± 7.7			
breastfeeds infant	1	1.4 ± 3.4	2.4 ± 5.2	2.7 ± 5.2	0.12	8.02**	0.467
	2	5.1 ± 6.2	4.6 ± 6	4.6 ± 5.6			
holds infant with bodily contact	1	3.3 ± 5.6	0.5 ± 1.4	1.3 ± 2.9	4.96**	0.43	0.24
	2	3.2 ± 4.9	1.6 ± 2.6	1.9 ± 3.6			
walks with infant in arms	1	1.2 ± 2.7	1.5 ± 4.3	0.3 ± 0.8	0.36	0.19	1.22
	2	1 ± 1.7	1.1 ± 1.8	1.3 ± 1.9			
<b>Distal care:</b>	1	1 ± 0.9	0.5 ± 0.6	0.3 ± 0.5	5.43**	0.003	1.88
	2	0.8 ± 0.8	0.5 ± 0.5	0.6 ± 0.8			
caresses face	1	2.3 ± 3.7	0.2 ± 0.5	0.6 ± 1	4.24*	0.26	2.56
	2	1.6 ± 2.5	1.1 ± 1.5	0.9 ± 1.6			
caresses belly	1	0.9 ± 2.8	0.2 ± 0.5	0.2 ± 0.6	1.94	0.85	0.38
	2	0.4 ± 0.9	0.2 ± 0.6	0 ± 0			
caresses head	1	0.9 ± 1.3	0.9 ± 1.9	0.4 ± 1	0.49	0.02	1
	2	0.9 ± 1.7	0.4 ± 0.8	0.8 ± 1.5			

*continue*

touches hands	1	0.9 ± 1.3	0.8 ± 1	0.1 ± 0.4	2.19	0.27	0.94
	2	0.7 ± 1.6	0.4 ± 0.8	0.4 ± 1			
touches feet	1	0.3 ± 0.6	0.2 ± 1.1	0.3 ± 1.1	0.59	0.80	0.41
	2	0.2 ± 0.7	0.4 ± 1.2	0.6 ± 1.1			
<b>Verbal approach</b>	1	7 ± 4.3	2.5 ± 2.8	1.3 ± 2.4	17.14***	0.001	6.30**
	2	4.5 ± 3.3	4.1 ± 3.8	2.2 ± 3.1			
<b>Distal approach:</b>	1	6.9 ± 3.1	7.5 ± 3.1	7.2 ± 3.2;	1.40	4.78**	0.37
	2	5.5 ± 2.7	6.9 ± 2.2	6.2 ± 2.9			
leaves infant in crib	1	8 ± 7.2	9.4 ± 8.3	9.1 ± 7.4	2.06	5.26*	0.49
	2	4 ± 5.8	8 ± 7.1	6.6 ± 7.5			
looks at infant	1	12.4 ± 4.3	12.1 ± 5.6	11.8 ± 6	0.07	0.09	0.02
	2	12 ± 4.8	11.9 ± 3.4	11.7 ± 5.6			
smiles at infant	1	0.5 ± 1.2	1 ± 1.6	0.6 ± 1.2	1.47	0.40	0.25
	2	0.6 ± 1.3	0.9 ± 1.7	0.3 ± 0.9			
<b>Rocking the infant</b>	1	1.7 ± 2.6	1.5 ± 2.4	1 ± 2.6	---	---	---
	2	1.3 ± 2.4	0.9 ± 1.6	1.1 ± 1.5			
rocks gently	1	3.3 ± 5.1	2.9 ± 4.8	3.0 ± 5.1	0.26	1.46	0.03
	2	2.5 ± 4.8	1.7 ± 3.2	2.1 ± 3			
rocks with some energy	1	0 ± 0	0 ± 0	0 ± 0	---	---	---
	2	0 ± 0	0 ± 0	0 ± 0			
<b>Checking interventions</b>	1	0.9 ± 1.1	0.8 ± 1.1	0.9 ± 1	0.28	0.75	0.55
	2	1.1 ± 1.1	1.2 ± 1	0.8 ± 1			
changes infant position	1	1.4 ± 1.1	1.6 ± 1.8	1.3 ± 1.1	0.77	1.39	1.13
	2	2 ± 1.3	1.5 ± 1.1	1.4 ± 1.4			
checks diaper	1	0.6 ± 1.7	0.5 ± 1.3	0.5 ± 1.4	0.06	0.006	0.45
	2	0.4 ± 1	0.7 ± 1.4	0.5 ± 1.7			
uncovers infant	1	0.4 ± 0.9	0.4 ± 0.8	0.6 ± 1.2	0.60	0.23	0.99
	2	0.4 ± 2	1 ± 2	0.3 ± 0.7			
covers infant	1	1.2 ± 2.6	0.8 ± 2.4	1.1 ± 2.7	0.17	0.32	0.34
	2	1.5 ± 3.4	1.5 ± 2.4	0.9 ± 2.2			
<i>Uses aids or other people's help:</i>	1	0.17 ± 0.9	0 ± 0	0 ± 0	---	---	---
	2	0.2 ± 1	0 ± 0	0 ± 0			
offers pacifier	1	0 ± 0	0 ± 0	0 ± 0	---	---	---
	2	0 ± 0	0 ± 0	0 ± 0			
asks for a relative's help	1	0.5 ± 2.8	0 ± 0	0 ± 0	---	---	---
	2	0.6 ± 3	0 ± 0	0 ± 0			
rings for nurses	1	0 ± 0	0 ± 0	0 ± 0	---	---	---
	2	0 ± 0	0 ± 0	0 ± 0			
<b>Ignores crying</b>	1	0.6 ± 2.9	1.8 ± 4.1	0.1 ± 0.7	0.46	4.5*	4.49**
	2	0.5 ± 2.9	0.05 ± 0.2	0.3 ± 1.1			

*Legenda:* For each category of behavior the value of *F* for comparison is cited; stars show differences with statistical meaning (\**p*<.05; \*\**p*<.01; \*\*\**p*<.001).

The global frequency of methods used by mothers in order to sooth an infant by **distal contact** differs by culture, but not by time (Table 2). This difference stems from how often mothers caress an infant's face, a method, by *post hoc* analysis resulting to be more frequent for Italian than for Albanian (*p* < .01) and Chinese (*p* < .05) mothers. As for **verbal approach**, its frequency differs according to culture and time (Table 2). *Post hoc*

*analysis* showed that during the first observation this behavior is more frequent for Italian than Albanian ( $p < .001$ ) and Chinese ( $p < .001$ ) mothers; during the second observation its frequency decreases for Italian mothers but increases for Albanian and Chinese mothers, even though the latter do it still less frequently than Italian mothers ( $p < .01$ ). The global frequency of behavior inspired to a **distal approach** differs according to time, but not to culture. The frequency of leaving the infant in the crib diminishes over time.

The macro-category of **rocking** was intended for two types of behavior: rocking gently and rocking with some energy, but this second behavior was never observed and then dropped in further analyses. The frequency of rocking gently does not differ either according to culture or to the time of observation.

**Interventions checking the infant**, which are not so frequent, also do not change according to time or culture: the statistical analysis of specific interventions related to this macrocategory confirms this result. **Use of aids or other people's help** is so rare, its frequency approaching 0, that this category was dropped. As for **ignoring infant crying**, its frequency differs according to culture; a *post hoc* analysis showed that it diminishes in a statistically significant way for Albanian ( $p < .05$ ) versus Italian and Chinese mothers.

*Differences in maternal behavior according to hospital setting and time of observation.* In order to evaluate the effects of hospital setting and the time of observation on the maternal soothing behavior of their infant's crying, the frequency of behaviors of Albanian mothers observed in Italian and Albanian hospitals, within 24 and 48 hours after delivery, was subjected to ANOVA for repeated measures.

As for **proximal care**, this overall category differs according to hospital setting but not according to time (Table 3). Albanian mothers in Italian hospitals take infants in their arms and breastfeed them less than do Albanian mothers in Albanian hospitals. As for **distal care**, its frequency does not vary either according to time or setting. It is worth noting, however, that caresses of the infant's face increase in the second as compared to the first observation. The **verbal approach** differs according to the time of observation and the hospital context. Talking to the infant increases in the Italian hospital over time while it diminishes over time in the Albanian hospital. As for **distal approach**, its frequency varies according to the hospital setting, but not over time of observation: Albanian mothers in Italian hospitals more frequently leave their infant in the crib and smile at it. As for **rocking** as a macro category, only rocking in a gentle way was compared, and it does not change according to hospital setting or time. Rocking with some energy was never observed and so was dropped.

The total frequency of **interventions checking the infant** does not change according to hospital setting or time. No differences as to single categories showed significant variation. The frequency of **use of aids or other people's help** is so low, approaching 0, that the data were not further analyzed. As for the frequency of **ignoring infant crying**, a significant effect of “time” and “context” as factors is observed. This behavior is less frequent in the second observation of Albanian mothers in the Italian hospital, while an opposite trend is observed in Albanian mothers in the Albanian hospital.

**Table 3: Frequency of mothers' behavior over 3 minutes according to hospital setting and time of observation**

BEHAVIOR	Time of obs.	Italian hospital (mean±d.s.)	Albanian hospital (mean±d.s.)	Effect by:		
				Context <i>F</i> (1,38)	time <i>F</i> (1,38)	interact. <i>F</i> (1,38)
<b><i>Proximal care:</i></b>	1	3.3 ± 3.8	5.6 ± 3	5.13*	0.18	1.72
	2	4.2 ± 3.3	5 ± 2.7			
takes infant in arms	1	7.9 ± 8.2	13.8 ± 5.9	7.32**	0.09	1.40
	2	10.2 ± 7.3	12.4 ± 5			
breastfeeds infant	1	2.4 ± 5.2	7.7 ± 7.4	6.56**	0.12	1.55
	2	4.6 ± 6	6.5 ± 6			
holds infant with bodily contact	1	0.5 ± 1.4	1.1 ± 4.0	0.001	1.811	1.50
	2	1.6 ± 2.6	1.1 ± 2.9			
walks with infant in arms	1	1.5 ± 4.3	0.2 ± 0.9	3.65	0.25	0.153
	2	1.1 ± 1.8	0.2 ± 0.5			
<b><i>Distal care:</i></b>	1	0.5±0.6	0.3±0.4	2.44	0.86	0.29
	2	0.5±0.5	0.4±0.4			
caresses face	1	0.2 ± 0.5	0.4 ± 0.8	0.01	8.27**	0.19
	2	1.1 ± 1.5	1.1 ± 2			
caresses belly	1	0.2 ± 0.5	0.1 ± 0.4	1.15	0.04	0.04
	2	0.2 ± 0.6	0.2 ± 0.5			
caresses head	1	0.9 ± 1.9	0.2 ± 0.5	3.74	0.73	1.09
	2	0.4 ± 0.8	0.3 ± 0.7			
touches hands	1	0.8 ± 1	0.7 ± 1.5	0.008	1.258	0.260
	2	0.4 ± 0.8	0.5 ± 1.1			
touches feet	1	0.2 ± 1.1	0 ± 0	2.28	0.41	0.02
	2	0.4 ± 1.2	0.1 ± 0.4			
<b><i>Verbal approach</i></b>	1	2.5 ± 2.8	2.5 ± 4.1	4.43*	0.02	4.86*
	2	4.1 ± 3.8	1.1 ± 1.6			
<b><i>Distal approach:</i></b>	1	7.5±3.1	5.4±2.2	15.83***	0.55	0.06
	2	6.9±2.2	5.1±1.9			
leaves infant in crib	1	9.4 ± 8.3	4.6 ± 6	5.97*	0.001	0.76
	2	8 ± 7.1	5.9 ± 5.1			
looks at infant	1	12.1 ± 5.6	11.3 ± 4.3	3.13	1.13	0.83
	2	11.9 ± 3.4	9.3 ± 4			
smiles at infant	1	1 ± 1.6	0.3 ± 0.8	8.05**	0.43	0.08
	2	0.9 ± 1.7	0.1 ± 0.2			

*continue*

<b>Rocking the infant:</b>	1	1.5 ± 2.4	1.1 ± 2.3	---	---	---
	2	0.9 ± 1.6	0.3 ± 0.7			
rocks gently	1	2.9 ± 4.8	2.1 ± 4.5	1.33	2.91	0.06
	2	1.7 ± 3.2	0.6 ± 1.4			
rocks with some energy	1	0 ± 0	0 ± 0	---	---	---
	2	0 ± 0	0 ± 0			
<b>Interventions checking infant:</b>	1	0.8 ± 1.1	0.6 ± 0.7	0.36	4.05	0.25
	2	1.2 ± 1	1.2 ± 1.1			
changes infant position	1	1.6 ± 1.8	1.2 ± 1.1	0.10	1.03	1.49
	2	1.5 ± 1.1	1.8 ± 1			
checks diaper	1	0.5 ± 1.3	0.2 ± 0.6	2.90	0.17	0.17
	2	0.7 ± 1.4	0.2 ± 0.6			
uncovers infant	1	0.4 ± 0.8	0.3 ± 0.8	0.32	3.82	0.08
	2	1 ± 2	0.8 ± 1.2			
covers infant	1	0.8 ± 2.4	0.7 ± 1.8	0.03	3.46	0.35
	2	1.5 ± 2.4	1.9 ± 3			
<b>Uses aids or other people's help</b>	1	0 ± 0	0.1 ± 0.1	---	---	---
	2	0 ± 0	0 ± 0			
offers pacifier	1	0 ± 0	0 ± 0	---	---	---
	2	0 ± 0	0 ± 0			
asks for a relative's help	1	0 ± 0	0.1 ± 0.2	---	---	---
	2	0 ± 0	0 ± 0			
rings for nurses	1	0 ± 0	0 ± 0	---	---	---
	2	0 ± 0	0 ± 0			
<b>Ignores crying</b>	1	1.8 ± 4.1	0 ± 0	2.65	2.27	4.54*
	2	0.05 ± 0.2	0.3 ± 1			

*Legenda.* For each category of behavior the value of *F* comparison is cited; stars show differences with statistical meaning (\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ).

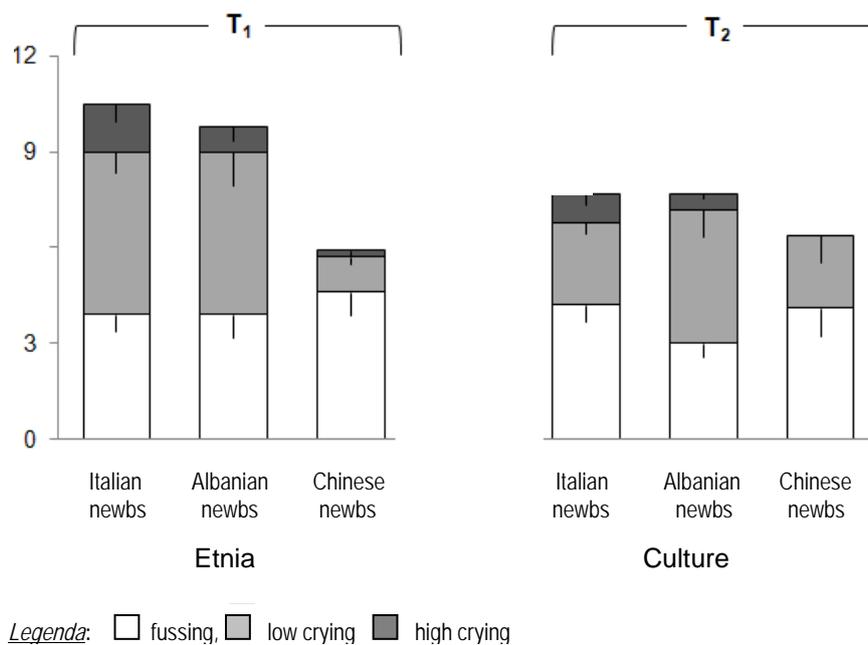
### *Infant crying*

It should be remembered that all neonates in this study cried at the beginning of the observation. as this behavior was the necessary condition for starting each observation. However crying could have been present or not in each of the following time units since it could have stopped. for a while or definitively. during the 3-minute time span. When there was infant crying. its presence was considered as “frequency of crying” and subsequently analyzed by an ANOVA for repeated measures as to maternal culture (Italian. Albanian. Chinese) and timing (24/ 48 hours after birth. first and second observation respectively).

*Differences in infant crying according to mothers' culture and time of observation.* The frequency of **infant crying** changes according to culture and timing [“culture” factor:  $F(2, 77) = 5.62, p < .01$ ; “timing” factor:  $F(1, 77) = 5.29, p < .05$ ; interaction between factors:  $F(2, 77) = 2.75, p = n.s.$ ]. *Post hoc* analysis showed that the frequency of infant crying is lower in

Chinese versus Italian newborns ( $p < .01$ ) and Albanian newborns ( $p < .01$ ), during the first observation ( $T_1$ , Figure 1). However in the second observation Italian and Albanian newborns' crying frequency decreases ( $T_2$ , Figure 1), approaching the frequency of that of Chinese neonates.

As for **crying intensity**, there were no significant differences either in high crying or in fussing, but low crying differed according to maternal culture and time of observation [“culture” factor:  $F(2.77) = 6.22$ ,  $p < .01$ ; “timing” factor:  $F(1.77) = 2.10$ ,  $p = n.s.$ ; interaction between factors:  $F(2.77) = 4.80$ ,  $p < .01$ ]. *Post hoc* analysis showed that low crying was less frequent for Chinese newborns compared to Italian ( $p < .01$ ) and Albanian ( $p < .001$ ) newborns during the first observation  $T_1$ , Fig.1), but the frequency of Italian and Albanian newborns' low crying diminished during the second observation ( $T_2$ , Figure 1) and there were no more differences compared to Chinese newborns' low crying.



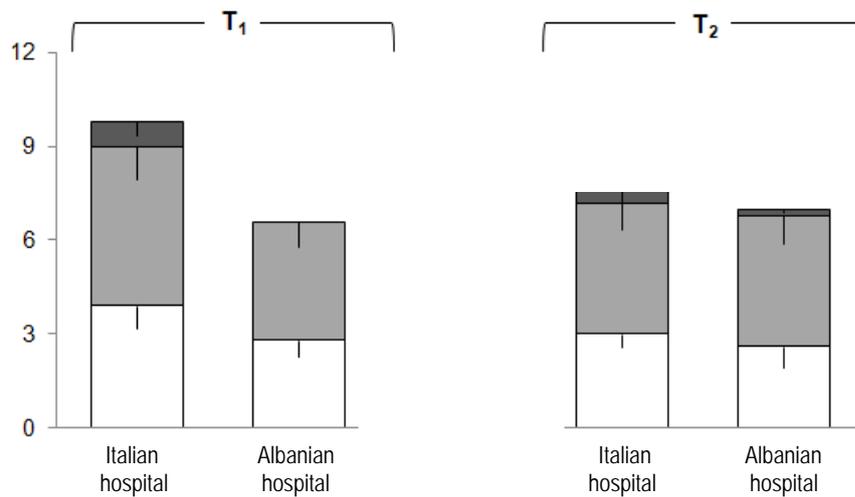
**Figure 1. Frequency of crying behavior (y axis) of newborns during the 3 minutes time span as to maternal culture and timing ( $T_1$ ,  $T_2$ ) of observation.**

*Differences in neonate crying according to hospital context and observation timing.* The frequency of neonate crying in children of Albanian mothers in Italian and Albanian hospitals observed at 24 and 48 hours after delivery (first and

second observations respectively) has been compared by ANOVA for repeated measures in order to evaluate the effect of hospital context and observation timing.

Albanian newborns born in the Italian hospital cried more frequently than those born in the Albanian hospital (Figure 2). but this differences does not reach the threshold of statistical significance [“context” factor:  $F(1,38) = 3.69, p = n.s.$ ; “timing” factor:  $F(1,38) = 1.02, p = n.s.$ ; interaction between the two factors:  $F(1,38) = 2.38, p = n.s.$ ].

As for **crying intensity**, neither frequency of fussing [“context” factor:  $F(1,38) = 1.03, p = n.s.$ ; “timing” factor:  $F(1,38) = 1.22, p = n.s.$ ; interaction between factors:  $F(1,38) = .62, p = n.s.$ ]. nor of low crying [“context” factor:  $F(1,38) = .36, p = n.s.$ ; “timing” factor:  $F(1,38) = .12, p = n.s.$ ; interaction between factors:  $F(1,38) = 1.12, p = n.s.$ ]. differ according to context and timing of observation (Figure 2). However the frequency of high crying is higher in the Italian than in the Albanian hospital, regardless of the timing of observation [“context” factor:  $F(1,38) = 4.09, p < .05$ ; “timing” factor:  $F(1,38) = .17, p = n.s.$ ; interaction between factors:  $F(1,38) = 1.07, p = n.s.$ ; see Figure 2].



Legenda: Observation:  fussing;  low crying,  high crying

**Figure 2: Frequency of crying behavior (y axis) of newborns during the 3 minutes time span as to hospital context and timing (T<sub>1</sub>, T<sub>2</sub>)**

## Conclusion

The various types of maternal soothing behavior have some common features as well as some specific characteristics. It is quite rare for mothers to ignore crying and it never happens for Albanian mothers in Albania. A proximal care is surely the most frequent approach, in whatever hospital context and for whatever maternal culture, regardless of the timing of observation. It is rare for mothers to use external aids or help by someone else.

There are significant differences in the soothing behavior of mothers belonging to different cultures: for Italian mothers it is more frequent to hold the infant with bodily contact, and to caress its face. There is only a partial confirmation of hypothesis 1 assuming that Italian mothers have a low contact approach to infants. Even if the frequency of “talking to the infant” and “caressing the face” show some use of low contact soothing behavior, using a verbal and “distal” approach, mothers however also very frequently use proximal care behavior with the infant.

It was hypothesized that Albanian mothers in their own, quite traditional country would use an elevated contact approach more frequently compared to Albanian immigrant mothers in Italian hospitals (hp.2). Breastfeeding, which ought to be the most frequent soothing behavior in a traditional country, is in fact more frequent for Albanian mothers in their own country than for Albanian immigrant mothers in Italy, independently of the encouragement of very early breastfeeding, which is recommended in Italian hospitals.

Over time, that is between 24 hours and 48 hours, the frequency of leaving the infant in the crib and ignoring its crying are observed to diminish, and soothing behavior such as taking infants into one’s arms and breastfeeding them increase. So the frequency of high contact behavior does then increase.

Considering the interaction between the mothers’ culture and the timing of the observation, it is especially the Albanian mothers in Italy who decrease the frequency with which they ignore infant crying, a very rare form of behavior among Italian and Chinese mothers already during the first observation. In addition, the frequency of “talking to infant” by Italian mothers diminishes, while this behavior is more frequent in Albanian and Chinese mothers, even if the frequency of this behavior in Chinese mothers is still less than in Italian mothers. It can be stated, then, that even if there emerge differences as to maternal culture, such as leaving the infant in the crib, ignoring infant crying, or talking to it, these differences decrease over time and maternal behavior becomes more homogeneous. It can be presumed that this phenomenon is tied, on the one hand, to the poor success of some forms of soothing behavior in getting infant crying to cease, and, on the

other. to some maternal “learning” of soothing methods observed in the context of the hospital itself.

The interactive and bi-directional nature of the situation studied. influenced by both mother and infant. finds confirmation in the changing of maternal interventions over time as well as in the diminishing of crying episodes over time.

As to the consideration of the differences which are tied to context. during the two observations. the behavior of the Albanian mothers in the Italian hospital seems to be somehow halfway between that of Italian mothers in Italy and Albanian mothers in Albania. This could signify that these mothers are subjected to contradictory influences. the ones prevailing in the context in which they find themselves living and in which they observe the indigenous Italian mothers. and those which are still acting in their mind. coming from their original culture.

It is worth noting. moreover. that even though allocate by other mothers is permitted in the Albanian hospital context. this did not occur. It was also very rare for the Albanian mothers to turn to someone. such as relatives or nurses. for assistance in the Italian hospital context.

Another factor which seemed to emerge from this study was that the Chinese infants seemed to cry less and with less intensity.

In conclusion. the data from this research show differences in maternal as well as in infant behavior according to culture. passage of time and context. However the frequency of elevated contact behavior. independently of maternal culture. increases over time. perhaps because it proves more effective in soothing infants. It can also be pointed out that mothers in the hospital setting. during the first days of life of the infant. are wholly free from other cares and may still have limited concerns about “spoiling the infant”, a concern often cited when older infants are picked up as soon as they cry.

The modalities of observation chosen did not allow for the analysis of a further meaningful variable which can characterize maternal soothing behavior: its latency. In addition to the type of maternal intervention adopted. also the promptness of its timing in the span of the first few minutes after infant crying begins can influence the relationship established in the dyad. This aspect remains as the object of further research studies which could complete the description of the variables influencing the phenomena of infant crying and maternal soothing.

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