Coping and parental role competence of mothers of preterm infant

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Aim. **The study was aimed at obtaining knowledge about mothers' experiences of preterm birth. The objective of the study is to explore coping strategies and self- perceived parental competence, in mothers of infant born moderately and severely preterm and admitted to the Neonatal Intensive Care Unit (NICU).**

Methods. **The study involved a group of 16 mothers of moderately preterm children (weeks' gestational age: mean=34, SD=2 and birth weight: mean=2000 g, SD=200 g) and a group of 14 mothers of severely preterm children (weeks' gestational age: mean=29, SD=2 and birth weight: mean=1700 g, SD=350 g). The following instruments were used with mothers to investigate focus areas of research: Coping Orientation to the Problems Experienced-New Italian Version (COPE-NVI), to analyse coping strategies of mothers, and a Q-sort, a self report on maternal competence.**

Results. **Data did not show statistically significant differences between the two groups of mothers, both in regard to considered coping strategies (social support, avoidance, problem focused orientation, transcendent orientation, positive aptitude), and the indicators of maternal self-perceived competence (coping, scaffolding, caregiving) (Mann-Whitney U test$_{(n1=16 \text{ and } n2=14)}$>0.05).**

Conclusion. **This study, highlighting the lack of differences between the two groups of mothers involved, seems to point out that, beyond the levels of prematurity, the condition of preterm birth itself is precisely the main stressor factor for mothers.**

KEY WORDS: Premature birth - Mothers - Adaptation, psychological - Intensive care units, neonatal.

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This study is developed in continuity with a high amount scientific literature which showed how preterm birth constitutes an evolutional risk condition for children at their birth with respect to his/her survival and initial characteristics of his/her neonatal development (organic-functional immaturity due to gestation age <32 weeks, birth weight <2000 g, neurocognitive complications, heart and breath difficulties, muscle hypotony, poor reflexivity, etc.).[1-7] Also, the preterm birth is a stress condition for mother [8-10] and can alter the developmental process of motherhood and the mothers' perception of their maternal competence.[9, 11-15] This mother's stress condition could lead to further implications on the configuration of physical and psychological development of infant.[14, 16-19]

The literature shows, in fact, that often this condition seems to negatively influence the ability of the mother to establish an affective relationship with her child [20, 21] and manage critical experiences and events,[22, 23] for example the ability to think and plan possible futures,[24] to the point of creating distressing experiences and difficulties in self- regulation of emotions,[25] post-traumatic stress disorder,[26-28] or dysfunctional behaviors.[14, 29]

These experiences often seem to be related to a self-representation in terms of inadequacy in relation to parental competence, particularly according to the function of caregiving, the ability to execute that function synergistically with health care of Neonatal Intensive Care Unit (NICU), the ability to face up the critical issues raised by such a complex condition.[20, 30, 31]

This is also related to the studies on outcomes of severely preterm birth, that show how the severity of prematurity represents a high risk to the survival of newborns and can result in real forms of disability.[11] In most cases, these data relate to studies that focus on the condition of severely preterm birth.

In particular, the study explores the impact that the variable "seriousness" of preterm birth (moderate and severe) could have on the mother's psychological functioning.

In this sense, it becomes important to study specific resources of the mother that may help her to manage the complexities of preterm birth. With reference to the resources, the study focuses on two areas: cognitive and emotional coping strategies and mother's perception of her own maternal competence.

With regard to coping strategies,[32] there was made reference to a model of interpretation that is developed in the following factors:

— Social Support, as maternal ability to search information, comprehension and "emotional outburst", for decreasing the sense of loneliness and reducing stress levels;[8, 20]

— Avoidance, as mother's behavioral and mental aptitude of detachment, characterized by the denial of the difficulties related with the risk condition;

— Positive Aptitude, as maternal aptitude marked by acceptance and positive reinterpretation of critical event;[33]

— Orientation to the problem, as maternal ability to plan procedures and actions that are functional to the management of problematic situations;[34]

— Transcendent orientation, as seeking of support in faith.[33]

To analyze the representation of the parental role competence, in the condition of preterm birth, the study assumes a "model of reading" that defines this area as parenting "acted" during a specific development period of child, integrating a sense of generativity and its functions.[35, 36] The reference three factors of maternal competence are:

— Coping (A factor), as mother's cognitive and emotional effort to meet the needs arisen from infant's preterm birth. It is the ability of recognition, self-regulation and control of person's emotions, besides the capability of redesigning, at a cognitive level, the critical events related to child's health condition.

— Scaffolding (B factor), as the mother's capability of supporting, steering and guiding her child. It is the cognitive ability of activating framing,[37] building routines, patterns and behaviour models in the relationships with her child. It is also the mother's willingness to show positive emotions to the infant (emotional availability), to activate an emotional monitoring of the son (attunement), and to interact continuously "face to face" with the son, encouraging contact between infant and external environment (*i.e.* family, NICU staff, etc.).[38]

— Caregiving (C factor), as mother's capability of being responsive, by providing proper cure, and adjusting her own reactions according to her child's development needs.

Materials and methods

Objectives

The objective of this study was to explore cognitive and emotional mothers' coping strategies of preterm children and their self representation in terms of parental compe-

TABLE I.—*Sample characteristics.*

Characteristics of children born moderately preterm			
Variable	Mean	SD	Range
Birth gestational age	34	2	32–35
Birth weight (g)	2000	200	1550-2450
Days of hospitalization	15	8	8–23
Female %	54%		
Male %	46%		
Characteristics of children born severely preterm			
Variable	Mean	SD	Range
Birth gestational age (weeks)	29	2	27–31
Birth weight (g)	1400	100	1250-1500
Days of hospitalization	25	7	18–32
Female %	51%		
Male %	49%		
Family background/socioenvironmental characteristics			
Variable	Mean	SD	Range
Age of mothers (years)	30	2	28-32
Education (years)	13	8	8-23
Number children	1	0	0-1

tence, considering the possible influence of the variable "seriousness" of preterm birth. In this sense, preterm birth is classified according to different levels of severity of prematurity (moderately and severely) that are defined according to two criteria: gestational age and birth weight.

Research hypothesis:

— to verify the existence of statistically significant differences between the indicators of coping strategies in the two groups of mothers (mothers of "moderately preterm" children and mothers of "severely preterm" children);

— to verify the existence of statistically significant differences between the indicators of self- representation in terms of maternal competence in the two groups of mothers

— to verify the relationship between indicators of coping strategies and indicator of self-perceived maternal competence in each mothers group.

Participants

The study involved 30 mothers of premature infants admitted to the neonatal intensive care unit (NICU) of a hospital of Palermo (Italy), with a mean age of 30 years, almost all of them first-time mothers (only 10% had already other children), 7 of them, moreover, were already mothers of premature twins (Table I). Before involving the research group, the official authorities had approved the proposed path in terms of correctness and ethics. After being informed of the purpose and procedures of research, mothers signed the document relating to privacy, as required by Italian law, Art. 13 of D.Lgs. 196/2003 for the protection of personal data treatment. Informed consent was given by mother.

The recruitment of the mothers was carried out through the mediation of NICU medical staff in accordance with inclusion and exclusion criteria listed below.

The selection criteria of the mothers were:

— gestational age <35 weeks and birth weight <2500 g.

The exclusion criteria were:

— presence of neurological pathology;

— presence of neurological complications;

— presence of genetic pathology or malformative syndrome.

The mothers involved were divided in two groups according to the "degree of prematurity" of infant variable defined as a function of gestational age and birth weight.

Specifically there were involved:

— group 1 consisting of 16 mothers of children born "moderately preterm", with a gestational age ranging between the 32nd and 35th weeks (mean=34 weeks, SD=2) with a weight between 1500 g and 2500 g (mean=2000 g, SD=200 g);

— group 2 consisting of 14 mothers of children born "severely preterm", with a gestational age less than 32 weeks (mean=29 weeks, SD=2) and with low birth weight (<1500 g; mean=1400 g, SD=100 g).

Procedures and tools

Mothers were administered the following questionnaires.

The Coping Orientation to the Problems Experienced – New Italian Version (COPE-NVI) [34, 39] is a validated and standardized self-report questionnaire, aimed to investigate the coping strategies in stressful situations, which in our case refers to the management of risk condition related to the premature birth of son. In particular, the COPE-NVI can detect five specific coping strategies, both cognitive and emotional, which, from the factor analysis performed for the Italian adaptation, are substantially independent: Social Support, Avoidance strategies, Positive Aptitude, Orientation to the problem and Transcendent orientation. The questionnaire is divided into 60 items, that consist of statements related to different possible modes of response to a stressful event; the answers are based on a 4-point Likert scale (1=I don't usually do it; 4=I almost always do it). Through an individual administration, we asked subjects to evaluate how often they activated proposed coping behaviors, in difficult and stressful situations related to the prematurity of the child. This scoring procedure enabled to obtain for each mother a score for each coping strategy, as well as an average score of the groups of subjects. These scores were compared with normative mean scores.

A Q-Sort questionnaire on parental competence in preterm birth [36] was also administered to mothers. It is a self- and hetero-observation technique,[40, 41] designed as a Q-set of 90 behaviours related to the factors of the parental competence model, above mentioned. It is constituted by 40 items for coping – the A factor, subdivided in 20 items for the emotional coping (A1) and 20 for the cognitive one (A2); 30 items for scaffolding – the B factor, subdivided in 10 items for the emotional scaffolding (B1), 10 items for the cognitive one (B2) and the other 10 for the rational scaffolding (B3); 20 items for caregiving – the C factor of the maternal competence, subdivided in 10 items related to behaviours that defining the responsivity and 10 items concerning behaviours defining the ability of adjustment to child's developmental needs. The content of the questionnaire has been validated through the technique of judges,[42] while the competence criteria, to which compare the profiles of each subject undergoing the Q-sort, have been defined through the contributions of psychologists expert in parentalness and parental competence research and intervention.[36] The coefficient of Cronbach's α has been calculated in order to control the agreement level between judges and the internal consistency of competence criteria score, which is the outcome of the mean of profiles provided by judges. For the procedures for administering the above tool, each mother involved in the research was asked to sort the items in the behavioural Q-set, according to a "fixed" distribution of the 90 items into 9 groups, based on their degree of similarity to the behaviours that the mother assigns to the management of premature children hospitalized at NICU; in this sense, the cards relating to practices considered to be very or quite similar to those of the mother were placed in groups with high scores,[7-9] while those related to behaviours differing from the one of the mother are placed in groups with low scores;[1-3] in the same manner, finally, all the items considered to be neither similar nor

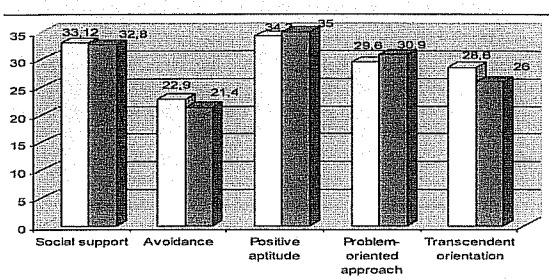

Figure 1.—Average scores of coping strategies in the research group. White: group 1 - Mothers of moderately preterm children. Grey: group 2 - Mothers of severely preterm children.

different were placed in groups with average scores.[4-6]

The questionnaires were administered to mothers by researchers of Pediatric Psychology research unit, within specific time agreed.

Results

The data, encoded according to the procedures of the reference tools used, have been well analyzed by descriptive as well as nonparametric statistics. In particular, by using the statistical software SPSS-19, a nonparametric analysis was performed, in order to compare the two groups through the Mann-Whitney U test (n1=16 and n2=14).[43] This was performed to calculate, first of all, whether there were any differences between the average scores of coping strategies and then among the indicators of maternal competence in relation to the variable "child's degree of prematurity" (group 1 and group 2). Furthermore, the Rho Spearman rank correlation coefficient was calculated for each study group in order to detect any possible connections between the scores of coping strategies and the indicator scores of perceived maternal competence; thus, it was possible to compare the configuration that this ratio assumes in the two groups.

With regard to the different cognitive and emotional coping strategies (social support, avoidance strategies, positive aptitude, problem-oriented and transcendent approach) as measured through the COPE-NVI, it is important to underline that all the mothers involved in the study, regardless of the degree of their child's premature birth, are characterized by their high employment of all coping strategies. In both groups, in fact, the average score of each strategy is equal to the one of the normative sample or even slightly higher (Table II).

On the other hand, by taking into account the variable "levels of prematurity," the statistical comparison between the scores of two groups of mothers, through the Mann-Whitney U test, showed no statistically significant difference when compared to all the coping strategies considered (Table II).

It should, however, be specified that, from a descriptive point of view, the group of mothers of "slightly premature babies" (group 1) tends to get higher scores than the other group, although not statistically significant, in the transcendent approach,

TABLE II.—*Coping strategies in the normative sample and in the research groups.*

Coping Strategy	Normative Sample mean (SD)	Group 1 mean (SD)	Group 2 mean (SD)	Mann-Whitney U (P value)
Social Support	27.7 (8.4)	33.12 (7.4)	32.8 (8)	107.500 (0.851)
Avoidance	23.5 (5.1)	22.9 (6.4)	21.4 (3.26)	107 (0.834)
Positive Aptitude	30.9 (6)	34.3 (6)	34.64 (2)	98 (0.559)
Problem-oriented approach	32 (6.7)	29.6 (2.4)	30.9 (1.9)	109.500 (0.917)
Transcendent orientation	22.7 (5.6)	28.6 (1.5)	26 (2.1)	86.500 (0.285)

Legend: Group 1 - mothers of moderately preterm infant. Group 2 - mothers of severely preterm infant

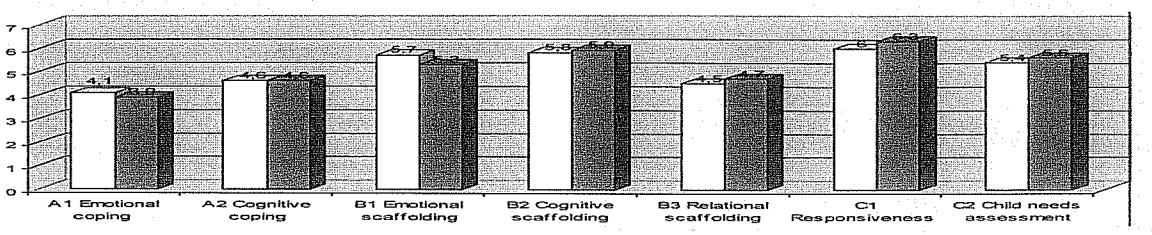

Figure 2.—Average scores in the indicators of perceived maternal competence in the research group. White: group 1 - Mothers of moderately preterm children. Grey: group 2 - Mothers of severely preterm children.

TABLE III.—*Correlations between coping strategies and maternal competence in the group of moderately preterm children.*

Scale of coping strategies	Q-SORT indicators						
	Emotional coping	Cognitive coping	Emotional scaffolding	Cognitive scaffolding	Relational scaffolding	Respon-siveness	Child needs assessment
Social Support	0.381	-0.049	0.115	-0.156	0.043	-0.264	-0.100
Avoidance	0.432	0.120	-0.217	0.107	0.214	-0.231	-0.667**
Positive Aptitude	0.422	0.076	0.161	-0.569*	0.199	-0.417	-0.055
Problem-oriented approach	0.286	0.108	-0.217	-0.368	-0.008	-0.000	0.112
Transcendent orientation	0.056	-0.185	-0.069	0.461	0.100	0.185	-0.326

*Statistical significance alpha <0.05
**Statistical significance alpha <0.01

TABLE IV.—*Correlations between coping strategies and maternal competence in the group of severely preterm children.*

Scale of coping strategies	Q-SORT indicators						
	Emotional coping	Cognitive coping	Emotional scaffolding	Cognitive scaffolding	Relational scaffolding	Respon-siveness	Child needs assessment
Social Support	-0.455	0.392	0.486	-0.178	-0.491	-0.329	0.002
Avoidance	0.306	-0.557*	0.132	-0.179	0.504	-0.013	0.338
Positive Aptitude	-0.153	0.722**	0.059	-0.358	-0.183	-0.119	-0.292
Problem-oriented approach	0.013	0.139	-0.093	0.002	0.031	-0.072	-0.119
Transcendent orientation	0.130	-0.386	-0.205	0.063	-0.153	0.136	0.139

*Statistical significance alpha <0.05
**Statistical significance alpha <0.01

in the social support and in the avoidance strategy; the other way round, the group of mothers of "severely premature babies" (group 2) tends to have slightly higher scores in a positive aptitude and problem-oriented approach (Figure 1, Table II).

However, contrary to these data taken from the COPE-NVI, which show the presence of adequate levels of all coping strategies in the mothers, the analysis of the data related to the perception that mothers have of themselves in relation to the ability to deal with difficulties related to the management of maternal functions with a premature infant (coping factor investigated through the Q-sort) states that in both groups, mothers tend to perceive themselves as endowed with a medium to low-medium coping strategy, both cognitive (group 1 and 2: mean=4.6 SD=0.8) and emotional (group 1: mean=4.1 SD=0.6, group 2: mean=3.9 SD=0.7) (Figure 1).

More specifically, as regards to the perception that mothers have of themselves and their maternal competence in case of preterm baby admitted to NICU, the com-

parison through the Mann-Whitney U test between the average scores of the considered indicators (cognitive and emotional coping, emotional scaffolding, cognitive and relational responsiveness and adaptation to the child's needs) in the two groups of mothers involved in the research highlights the lack of significant differences and therefore the presence of an almost unnoticeable distribution (Figure 2), where, in both groups, the presence of a care giving approach appears to be more relevant, defined in terms of responsiveness, followed by the scaffolding, in particular of a cognitive (indicator B2) and emotional type (indicator B1).

In conclusion, for the presence in both groups of mothers involved, of possible correlations between emotional and cognitive coping and indicators of perceived maternal competence, the calculation of Spearman's RHO showed some interesting and different results in the two groups (Tables III, IV).

Specifically, with regard to the mothers of moderately preterm babies (group 1), it showed a statistically significant negative type of strategy of avoidance and adaptation to the child's needs, and again, between the positive aptitude and cognitive scaffolding As for to the mothers of severely premature babies (group 2), however, it was found a negative correlation between the avoidance strategy and perceived cognitive coping, as well as a positive correlation between the latter and the positive aptitude.

Discussion

This study highlights the presence of important resources that can allow mothers with premature babies to overcome their risky condition, which should be identified, meanwhile, in coping strategies, both emotionally and cognitively, although it seems that mothers are not always and fully aware of this resource. It would seem, in fact, that these mothers, even though they know how activate different and specific coping strategies, for example, the request for social support, positive aptitude and transcendent orientation (especially in moderately preterm mothers) (Table I) have, however, difficulties recognizing in themselves these coping skills when you ask them to refer more explicitly to the management functions of a preterm and admitted to NICU child. Moreover, data obtained from the Q-Sort tend to show that these mothers feel that their child caring performs almost exclusively in terms of responsiveness to the child and their attempt to harmonize with his/her emotional state, as well as, by building a relationship with the child based on several routine actions contextualized in the life of the department. One can perhaps say that in both groups, mothers tend to be considered especially able of dealing with special developmental needs of their premature child, harmonize with him; but just being too focused on taking care of their child, they appear to be more "fragile" as for the proper management of the difficulties to be able to recognize their special needs as mothers of a premature baby who is in NICU. They also show difficulties knowing how to express and above all, knowing how to look for a proper response to these needs. Such condition could contribute to create forms of depression.[31]

Still, as for the correlation results between the two considered variables (coping strategies and perceived maternal competence) obtained in the two groups of mothers, it is interesting, when compared to the group of mothers of moderately preterm children, the negative correlation between avoidance and adaptation to the developmental needs of children and between positive aptitude and cognitive scaffolding In other words, it seems that these mothers tend to use more behavioral and mental detachment, denial of problems, distraction from these conditions etc. as a strategy for managing risk conditions defined by the preterm birth of their child; they also feel less able to adapt their behavioral and emotional responses to the specific evolution of the child; the other way round, a reduced use of the avoidance strategy seems to steer these mothers towards recognizing the special developmen-

tal needs of their child at NICU. As regards to the other highlighted negative correlation, it seems that every time that the mothers of moderately preterm children use as a coping strategy the positive aptitude, and so, an aptitude of acceptance and a positive reinterpretation of the situation, it may happen that they become less willing to build a relationship with the child at NICU, a relationship that can be based on specific behavioral routines that promote a sharing of attention. Focusing on the group of mothers of severely premature children, the correlation, in a negative sense, between avoidance and cognitive coping, perceived in a positive sense, seems to be interesting, the correlation between this strategy and the positive aptitude. In other words it appears that the more mothers manage that aspect of maternal competence with a child at NICU, defined by the cognitive restructuring of stressful events and the attempt to understand them as possible developmental challenges to deal with, the less they use the avoidance strategy, assuming, on the contrary, a positive aptitude of acceptance. It seems, therefore, that an active and adaptive aptitude can help to create a sense of self awareness as a mother who can find solutions and meanings to different events.

Conclusions

The data of this study suggest some considerations that lead first to emphasize the presence of mothers who live the condition of premature birth of their son, of reactive mode and coping strategies that may constitute possible resources for proper management of parental functions and for actively in this risk condition. The presence, in fact, of a high capability of coping in both groups of mothers, represents a datum which is found in a considerable discontinuity with the literature of the field which, especially in cases of high prematurity, highlights how the premature birth of a child negatively affect the ability to deal with stressful situations the stress, this influence is such that it can induce women to possible post-traumatic reactions.[26, 44, 45] It should be noted also that the data related to the perception that all mothers have of their own ability to properly activate the parental functions, especially in terms of taking care of the child's needs, even if in the context of the NICU, it seems to represent a further element which differs from the results of other studies on this area; these studies, in fact, emphasize how preterm birth is a condition for creating obstacles for the building of an affective and parental relationship with the child.[21]

Furthermore, the study, showing the absence of significant differences between the two groups of mothers in relation to the severity of the preterm birth, seems to emphasize that the latter does not play a decisive role with regard to coping strategies and the perception of their own maternal competence, as if the condition of preterm birth itself, regardless of when it occurs, can lead to a state of stress in the mothers. It seems, therefore, that the event "preterm birth", regardless of the presence of serious developmental risks and sometimes the risk of the survival of the child, lead mothers to leverage all the energy to not succumb, to be always aware; it is, perhaps, a kind of protagonism in the management of situations, in the presence of a capacity of trusting, to be supported and guided, to manage the criticality of the experienced situation. The possibility of making reference to sources of social support, as well as to be oriented in the management of the problem, can represent an element that "give strength" at the same time to the coping skills of mothers.[46, 47]

Within this framework of absence of statistically significant differences between the two groups with respect to the management of coping strategies and maternal functions, however, the correlational data between both variables seem to lead to a further consideration in terms of characterizing trends. It seems that mothers of moderately preterm children, the very active approach, aiming to collect all the energy to accept the critical items from the preterm birth of the son, may challenge the ability

to lead the relation with the child in view of the child's special developmental needs. In contrast, for the mothers of severe preterm children, this positive aptitude seems to have a relapse, not so much in terms of relationship with their child, but, on the personal field of the relationship that the mother has with the event "pre-term birth of a child", to the extent that it supports her in dealing with the distressing condition of cognitive level. These results may serve both as a guide for further studies about the influence of variables related both to the mother, for example in terms of chronological maturity (age), as the socio-cultural context, where many studies point out that their skills of dealing with problems and coping of the premature born son, may be related to age of the mother and her level of education, as well as the presence of a supportive family background, as seems to be suggested by the characteristics of the research group. The involved women, in fact, are all women with an average age of 32 years, belonging to family situations characterized by the presence of a parental couple defined in terms of stability and external support systems which may constitute a resource that supports the mother when crossing the established risk condition of preterm birth.

References

1. Theunissen NCM, Veen S, Fekkes M, Koopman HM, Zwinderman KAH, Brugman E *et al.* Quality of life in preschool children born preterm. Dev Med & Child Neurol 2001;43:460-5.
2. Saigal S, den Ouden L, Wolke D. School age outcomes in children who were extremely low birth weight from four international population-based cohorts. Pediatr 2003;112:943-50.
3. Saigal S. Behavioural and emotional functioning in preterm infant. In Tremblay RE, Barr RG, Peters RDeV. Edited by: Encyclopedia on Early Childhood Development [online]. Montreal – Quebec: Centre of Excellence for Early Childhood Development 2006, 1-7.
4. Perricone G, Scimeca GP, Maugeri R. La nascita pretermine nell'ottica del "to care". Età evol 2004;78:85-92.
5. Perricone G, Morales MR, Polizzi C. Developmental outcomes of preterm birth: cognitive and behavioural problems in moderately preterm children at preschool age. In Contreiras D, Sampaio J. Edited by. Preterm Infants. Development, Prognosis and Potential Complications. New York – USA: Nova Science Publishers; 2012. p. 1-45
6. Perricone G, Morales MR. The temperament of preterm infant in preschool age. Ital J Pediatr 2011;37:4.
7. Perricone G, Morales MR. Prerequisiti e indicatori di difficoltà di apprendimento in bambini moderatamente pretermine di età prescolare. Ricerche di psicologia 2011;1:23-38.
8. Dudek-Shriber L. Parent stress in the neonatal intensive care unit and the influence of parent and infant characteristics. Ame J Occup Ther 2004;58:509-20.
9. Carter JD, Mulder RT, Bartram AF, Darlow BA. Infant in a neonatal intensive care unit:parental response. Arch Child Fetal Neonatal 2005;90:109-13.
10. Maher C. NICU:stress the family. O&G Magazine 2011;13:28-9.
11. Zelkowitz P, Bardin C, Papageorgiou A. Anxiety affects the relationship between parents and their very low birth weight infant. Infant Ment Health J 2007;28:296-313.
12. Holditch-Davis D, Miles MS. Mothers stories about their experience in the neonatal intensive care unit. Neonatal Netw 2000;19:13-21.
13. Holditch-Davis D, Schwartz T, Black B, Scher M. Correlates of mother-premature infant interaction research. Res in Nurs Health 2007;30:333-46.
14. Müller-Nix C, Ansermet F. Prematurity, risk and protective factors. In Handbook of Infant Mental Health. Edited by Zeanah C, New York: Guilford Press; 2009. p. 172-9.
15. Muller Nix C, Forcada Guex M, Pierrehumbert B, Jaunin L, Borghini A, Ansermet F:Prematurity, maternal stress and mother-child interaction. Early Hum Dev 2004;79:145-58.
16. Aagaard H, Hall EOC. Mother's experiences of having a preterm infant in the neonatal intensive care unit:a meta-synthesis. J PediatR Nurs 2008;13:26-36.
17. Baldoni F, Facondini E, Landini A, Romeo N, Crittenden PM. Development of Attachment in Families with Preterm Child:a Long-Term Study. Newcastle, UK, DMM Meeting, 17-18 April 2007
18. Latva R, Korja R, Salmelin RK, Lehtonen L, Tamminen T. How is maternal recollection of the birth experience related to the behavioral and emotional outcomes of preterm-infant? Early Hum Dev 2008;84:587-59.
19. Imbasciati A, Cena L. I bambini e i loro caregiver. Roma: Borla; 2009.
20. Talmi A, Harmon RJ. Relationship between preterm infant and their parents:distruption and development. Zero Three 2003;24:13-29.
21. Brownw JV, Talmi A. Family based intervention to enhance infant-parent relationship in the neonatal intensive care unit. J Pediatr Psychol 2005;30:667-77.
22. Veddovi M, Kerry DT. Gibson F, Bowen J, Starte D. The relationship between depressive symptoms following premature birth, mother's coping style and Knowledge of infant development. J Reprod Infant Psychol 2001;19:313-23.
23. Loo KK, Espinosa M, Tyler R, Howard J. Using knowledge to cope with stress in the NICU:how parents integrate learning to the read the psychological and behavioral cues of the infant. Neonatal Netw 2003;22:31-7.
24. Baldoni F, Imbasciati A, Cena L. La relazione madre bambino. Dalla psicoanalisi infantile alle nuove prospettive evoluzionistiche dell'attaccamento. Milano: Springer Verlang; 2010.
25. Trombini E. Disturbi alimentari e prematurità: prevenzione e trattamento. Psychofenia 2007;10:107-46.
26. Beck CT. Recognizing and screening for post partum

depression in mother of NICU infant. Adv Neonatal Care 2003;3:37-46.
27. Lefkowitz DS, Baxt C, Evans JR. Prevalence and correlates of posttraumatic stress and postpartum depression in parents of infants in the Neonatal Intensive Care Unit (NICU). J Clin Psychol Med Settings 2010;17:230-7.
28. Meijssen DE, Wolf MJ, Koldewijn K, Van Wassenaer AG, Kok JH, Van Baar AL. Parenting stress in mothers after very preterm birth and the effect of the Infant Behavioural Assessment and Intervention Program. Child Care Health Dev 2011;37:195-202.
29. Allen EC, Manuel JC, Legault C, Naughton MJ, Pivor C, O'Shea TM. Perception of child vulnerability among mothers of former premature infant. Pediatr 2004;113:267-73.
30. Coppola G, Cassibba R. La prematurità. Roma: Carocci; 2004.
31. Miles MS, Holditch-Davis D, Schwartz T, Todd A, Scher M. Depressive Symptoms in Mothers of Prematurely Born Infants. J Dev Behav Pediatr 2007;28:36-44.
32. Lazarus R S, Folkman S. Stress, appraisal, and coping. New York: Springer; 1984.
33. Carver CS, Scheier MF, Weintraub JK. Assessing coping strategies:A theoretically based approach. J Pers Soc Psychol 1989;56:267-83.
34. Sica C, Novara C, Dorz S, Sanavio E. Coping orientation to problems experienced (COPE): traduzione e adattamento italiano. Bollettino di Psicologia Applicata 1997;223:25-34.
35. Houzel D. Le dimensioni della genitorialità. In Lucarelli D, Nicolò AM, Tavazza G Edited by. Genitorialità in cambiamento. Numero monografico di Interazioni 2005;23:7-11.
36. Perricone G, Morales MR. Madri in corsia. La competenza genitoriale nell'ospedalizzazione pediatrica. Roma: Carocci; 2009.
37. Bruner J. Intention in the structure of action and interaction. Adv Infancy Res 1981;1:41-56.
38. Trevarthen C. Empatia e biologia. Milan: Raffaello Cortina; 1998.
39. Sica C, Magni C, Ghisi M, Altoè G, Sighinolfi C, Chiri LG, Franceschini S. Coping Orientation to Problems Experienced-Nuona Versione Italiana (COPE-NVI):uno strumento per la misura degli stili di coping Psicoterapia Cognitiva e Comportamentale 2008;14:27-53.
40. Cassibba R. L'uso del metodo Q-sort nella ricerca osservativa. In Tartabini A. Edited by. Tecniche di osservazione del comportamento infantile. Problemi e metodologie in un approccio comparatistico. Milan: McGraw-Hill; 1998.
41. Perricone Briulotta G Agire l'osservazione. Modelli e percorsi. Milan: McGraw Hill; 2003.
42. Thurstone L. A low of comparative judgement. Psychol Rev 1927;34:273-86.
43. Ercolani AP, Areni A, Leone L. Elementi di statistica per la psicologia. Bologna: Il Mulino; 2008.
44. Schmucker G, Brisch Kh, Kohntop B, Betzler S, Osterle M, Pohlandt F *et al.* The influence of prematurity, maternal anxiety and infants' neurobiological risk on mother-infant interaction. Infant Ment Health J 2005;26:423-41.
45. Jackson K, Ternestedt B, Schollin J. From alienation to familiarity:experiences of mothers and fathers of preterm infants. J Adv Nurs 2003;43:120-9.
46. Pepe F, De Luca F. Modalità di parto e counselling. In: Pepe F, De Luca F, Schavone F. Diagnosi e Management Perinatale delle malformazioni fetali. Rome: Verduci Editore; 2009.
47. Perricone G, Prista Guerra M, Cruz O, Polizzi C, Lima L, Morales MR *et al.* Maternal coping strategies in response to a child's chronic and oncological disease: a cross-cultural study in Italy and Portugal. Pediatr Reports 2013;5:43-7.

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