

PSYCHOSOCIAL FACTORS AND CONDITIONS ASSOCIATED WITH THE NON-ORGANIC FAILURE TO THRIVE IN INFANTS AND YOUNG CHILDREN

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ABSTRACT. Non-organic failure to thrive in infants and young children is a severe condition with a strong impact on the child's developmental outcomes. We analyzed social environmental, emotional, behavioral and temperamental factors, as well as several mental health issues drawn from observation and assessment of sixty-nine infants and toddlers hospitalized for nutrition disorders, in order to determine the impact of non-organic FTT on the child's development at this stage. Several implications for enhancement of resilience were also derived.

Keywords: *non-organic failure to thrive, infant development, mental health screening, malnutrition, psychosocial stressors.*

ABSTRAKT. Psychosoziale Faktoren und Bedingungen verbunden mit der nicht organischen Gedeihstörung bei Babies und kleine Kinder. Die nicht organische Gedeihstörung bei Babies und kleine Kinder ist ein sehr ernster Zusatand mit einem großen Einfluss auf der Entwicklung der Kinder. Wir haben soziale umgebende, emotionelle, verhaltensweisliche und anfällige Faktoren aber auch einige geistige gesundheitliche Ergebnisse aus Beobachtungen und Bewertungen von sechsundneunzig Babies und Kleinkinder aus dem Krankenhaus mit der Diagnose Ernährungsstörung, um den Einfluss der nicht organischen Gedeihstörung bei der Entwicklung der Kinder auf dieser Etappe zu bestimmen. Einige Auswirkungen für Betonung der Ausdauer wurden auch abgeleitet.

Stichworte: *nicht organische Gedeihstörung, Entwicklung der Babies, geistige gesundheitliche Rasterung, Unterernährung, psychosoziale Stressfaktoren.*

Failure to thrive (FTT) is a condition detected in infancy and early childhood, diagnosed before age two, with great impact on developmental outcome. Among other "psychophysiological dysregulations/ disturbances" (King et al., 2000, p. 5314) it implies a great risk on the child's physical and psychosocial development (Robinson et al., 2001, Gilliam & Mayers, 2002). The condition is "characterized by a marked

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deceleration of weight gain and a slowing or disruption of acquisition of emotional and social developmental milestones. Deceleration of linear growth and head circumference growth are associated but not primary phenomena” (Woolston, 2002, p. 641). Failure to thrive is a disruption of the child’s normal development that, without help, can increase the risk for child neglect, abuse and death (Iwaniec, 2005). Block et al. (2007) consider the prevalence of FTT much higher than reported, as approximately 50% of children suffering from this condition are not identified.

There are three *components* of FTT: (1) reduced weight gain, (2) delay in linear growth and (3) developmental delay, with significant differences in etiology, age of onset, severity, associated problems, family and environmental stress (Molitor & Mayes, 2002) between individual children. Sometimes FTT is the only symptom for very severe medical conditions, such as Bartter Syndrome (Allapathi et al., 2008), it is a sign of illness or abnormal function (Hull, 2002), an early warning sign of vulnerability (Block et al., 2007) and always reflects important and various deficits.

From a *historical* point of view, the concept was first described in 1897 and in 1908 Chapin (Hull, 2002) acknowledged that in certain infants the growth problem reappears after returning in a dysfunctional environment after their growth was improved. FTT was first described in DSM-III as a reactive attachment disorder, the problems of growth and feeding were ignored at the time when the manual was published. DSM-IV included the disorder among the newly described category of feeding disorder of infancy and early childhood. Various terms were used for the disorder along the history of research in the field, with more or less accuracy (“hospitalism, anaclitic depression, institutionalism, environmental retardation, maternal deprivation syndrome, psychosocial deprivation dwarfism, deprivational dwarfism, deprivation syndrome, FTT, environmental FTT, and nonorganic FTT syndrome”, Molitor & Mayes, 2002, p. 641).

The disorder is either *organic* in nature, when a physical disease is present and affects the child’s growth, or environmental (*nonorganic*), in the absence of physical disease (Martin et al., 2008), related to family, institutional, individual factors. Martin et al. (2008) assert that an organic condition may often generate a feeding disorder, while behavioral factors maintain the condition over time. The nonorganic form was often associated with failure of the attachment relationship between infant and mother during the first year of life, lack of bonding and engagement especially with respect to feeding (Hull, 2002), usually in absence of caloric deprivation.

The onset of FTT is in the first three years of life and children who present the disorder in the first year of life usually suffer from food deprivation or a physiological disorder interfering with caloric intake, while toddlers and young children who develop the disorder usually suffer from problems in the interaction with the caregiver. (Woolston, 2002)

Benoit & Coolbear (2004) consider FTT particularly interesting for the fields of attachment theory and developmental psychopathology as it raises the question whether a disturbed relationship between caregiver and child or certain child

characteristics, not related to the environment in which he/she is raised and to the relationship with the caregiver interfere most with child's development. Block & Krebs (2005) acknowledge the importance of attachment disturbances for the prediction of developmental disorders in childhood and though they are not always associated with FTT, similar factors contribute to the prevalence of both disorders. Robinson et al. (2001) mention several factors referring to the parents' life, such as: parental maltreatment history, traumatic childhood experiences, aberrant early nurturing, conflictual couple relationship, domestic violence, stressful life events, financial difficulties, deficient parental competencies, insecure attachment, social and family problem solving skills as factors that contribute to the development of FTT among children from diverse social environments, in all levels of the society (Hull, 2002, Iwaniec, 2005, Block & Krebs, 2005).

Physical and emotional deprivation of the child, child neglect and/ or abuse, poor caregiving, family stress, chronic illness in the family, divorce/ separation, single parenting, lack of education, social isolation, maternal emotional unavailability due to depression, maternal personality disorder, parental substance abuse, lack of pleasurable relationship during feeding and other signs of ignorance towards child's needs (poor hygiene, diaper rash, skin infections), unattendance of the child while he/she is left in the bed for long periods, infant temperament (Hull, 2002, Marans & Cohen, 2002, Block & Krebs, 2005, Iwaniec, 2005, Martin et al., 2008) are risk factors for FTT and poor developmental outcome. Gillian & Mayes (2002) identify disturbances of the parent-child relationship, environmental factors, repeated separations and child's characteristics, such as apathy and withdrawal as factors related to failure to thrive. Iwaniec (2005) mentions conflicts in the home, chaos, poverty, lack of information for parents about children's developmental needs as other factors that contribute to impairment of progress.

The social learning theory explains children's feeding and eating disorders by considering the social interactions during meals, feeding practices are considered to affect the child's feeding behavior and either determine or maintain the feeding problems (Martin et al., 2008). Richters & Volkmar (2002) argue that in the case of infants with nonorganic FTT mothers show less positive affect, interact less, tend to terminate feeding arbitrarily and they report the lack of emotional support from extended family.

As Molitor & Mayes (2002) notice, FTT is a common disorder, especially for children coming from low-income families and Martin et al. (2008) cite the opinion that FTT should be treated as a separate *pediatric social illness*, thus needing the behavioral assessment of the feeding interaction for diagnosis. As FTT has lasting effects both on physical growth and cognitive and social functioning and it is quite common among both sexes, though a little more frequent among boys at an older age (Woolston, 2002), it represents a great concern in countries such as USA, but given its heterogeneity, research within the field are quite scarce (Benoit, 1993, after Molitor & Mayes, 2002).

Thus, the etiology is multifactorial, any factor that can determine problems with eating or caloric intake, in relation with disturbances in the child – caregiver affective interaction and relationship, infant organic disease, prematurity, neurologic and behavioral problems, long and frequent separations from mother due to hospitalization, maternal immaturity and lack of experience as in the case of adolescent mothers, single motherhood (Woolston, 2002, Block & Krebs, 2005, Daniel et al., 2008, Martin et al., 2008) can account for the occurrence of the disorder.

FTT has been *associated* with psychopathological disorders such as depression, hypersensitivity to stimulation, avoidance of interaction with others, lack of responsiveness, expressionless face (Hull, 2002, Marans & Cohen, 2002), as well as multiple developmental perturbations, such as delays in different developmental areas, lack of self-care skills, attention deficits, emotional and behavioral disorders, language retardation (Richters, Volkmar, 1994), often associated with autism. Other behaviors include: gaze aversion, inactivity, under-reactivity to stimulation, rumination, along with the physical growth problems. The infant resists being held and shows signs of discomfort or resistance when picked up. Benoit & Coolbear (2004) assert that on the long term, FTT can affect the intellectual functioning, reading and language skills, adjustment to social environment, regulation, weight and height, the attachment relationship established between child and caregiver being a possible mediator factor between risk and FTT.

The *outcome* of the disorder depends on various factors, such as “socioeconomic status, maternal education, parental mental illness, and family social functioning” (Woolston, 2002, p. 642), although no effect was proven for the demographic characteristics such as family size, mother’s age, education, marital status or sex of the child (Richters & Volkmar, 2002).

Resilience is “the ability to thrive as an individual despite being exposed to serious adverse life circumstances, situations, stressors, and risks” (Hartman & Winsler, 2005). One sense of the term refers to a general human characteristic to adapt, be flexible and survive negative life events. In another sense, the term refers to the psychological quality to recover from trauma or overcome risks and achieve high competence in various developmental domains, namely an ability to thrive when faced with adversity and trauma. Hartman & Winsler (2005) identify a number of protective or buffer factors found in groups of resilient children exposed to difficult situations. These factors fall into three categories: individual, family and external support factors and are usually identified in older children. Thus, we find relevant to investigate the nature of these factors, as compared to factors leading to FTT in infants and toddlers exposed to risk factors.

The debate over the need for caloric intake associated or not with emotional and sensory stimulation in malnourished infants is still actual, with some authors sustaining that food intake alone is not sufficient for weight gain, while others arguing that a diet rich in calories is enough for weight gain even in under-stimulated infants with FTT. (Molitor & Mayes, 2002) From the triad of symptoms associated with FTT, research evidence has shown that reduced caloric intake is the cause for

physical problems (reduced weight gain and inadequate growth), while emotional deprivation accounts for the developmental delay.

The *treatment* steps include the assignment of a primary care nurse who establishes a relationship with the baby, while targeting the mother's engagement and bonding, thus rehabilitating the mother – infant relationship. The involvement of social services is often required in order to ensure the infant's safety and monitor the parents' progress (Hull, 2002), so in order for the treatment to be efficient on a long term period, it needs to be multidisciplinary. On a long term, the effects of nonorganic FTT can leave sequelae in terms of reduced brain size, later emotional and learning problems, lower cognitive performance, behavioral difficulties, personality development (Hull, 2002, Block et al., 2007).

Iwaniec (2005), Daniel et al. (2008) identify two basic categories of interventions in the case of FTT children: (1) crisis intervention (environmental stress reduction, assistance with family issues like poverty, housing, health, treatment of child's feeding difficulties, food aversion and avoidance, adjustment of food intake) and (2) therapy, counseling and support (improvement of interaction during feeding, issues referring to formula preparation, feeding techniques, caloric intake, vomiting, play and talk, strengthening the mother – child bond, reducing negative feelings, attachment work, cognitive therapy, approach of financial difficulty). Careful and long monitoring of outcomes is necessary in order for the child and his/ her family to reach satisfactory outcomes. Block et al. (2007) reported that early intervention conducted at children's home reduced many of the possible effects of the condition, so vulnerable children and families should benefit from intervention and follow-up in order to ameliorate developmental risks. Hospitalization of children with nutrition disorders in infancy and early childhood is subject of controversy, but as Martin et al. (2008) state, it offers the possibility for intensive, multiple daily feeding treatment, though it is an artificial setting that may also have unwanted effects.

Our present study has several **objectives**: (1) to investigate the impact of infants and toddlers' age, gender, degree of malnutrition, age of debut and duration of hospitalization on the acquisition of non-organic FTT; (2) to establish the influence of non-organic FTT on the child's development on several areas: fine and gross motor, cognitive, language and social-emotional at admission in and release from hospital; (3) to determine the role of the condition on infant mental health; (4) to establish the association between FTT and physical, psychological and social characteristics of children and the environment where they were nurtured before admission in the hospital. We **hypothesize** that: (1) the age of admission in the hospital and length of hospitalization are significantly higher for children with FTT; (2) the severity of malnutrition is significantly higher in children with FTT than resilient children; (3) mental health is significantly more impaired in children with FTT than children without FTT; (4) the developmental delay is significantly higher in children with FTT than in children that do not acquire the condition, both at admission and release from hospital; (5) socially depriving conditions are significantly more severe in children with FTT than children without the condition.

Method

Participants

Sixty-nine infants and toddlers hospitalized for nutrition disorders and associated medical conditions were included in the study. The selection of participants was made targeting the sample homogeneity and exclusion criteria were severe neurological disorders (cerebral palsy), sensory disability and severe acute physical condition. *Ethical* principles were data confidentiality, anonymity, avoidance of stigmatization and discrimination, use of non-intrusive assessment and avoidance of child discomfort during data gathering. The exclusion criteria did not refer to intervention, which was accessible to all children in the clinic.

The children were considered to suffer from nonorganic FTT if, besides having a lower developmental level (which applies to the whole sample), remain below developmental level for a month (Iwaniec, 2005) after admission in the hospital and fail to gain weight despite being properly fed, compared to other children cared for in the same conditions, which formed the resilient group. An important issue is that all children are exposed, besides different other factors, to an important medical condition, namely the malnutrition. Despite the similarities in the caregiving environment, 36 children (representing a proportion of 52.2% of the total number included in our sample) were resilient and did not develop the non-organic FTT, while 33 children (47.8%) developed this condition.

The participants were aged between 2 and 28 months (mean 8.58, SD 6.03), 43.5% female and 56.5% male. Considering the presence of malnutrition, the sample distribution was 8.7% first degree, 2.9% degree I/II, 40.6% second degree, 15.9% degree II/III and 31.9% third degree malnutrition. As the number of children with malnutrition I/II was very small, these children were included in the subgroup with first degree malnutrition for data processing.

Instruments and procedure

Developmental level was assessed for all the participants by semi-structured observation, that was built on items from different instruments. Observation was considered appropriate for children's special needs and the conditions under which they were assessed, namely the hospital setting. Items from Brunet-Lezine Scale for Measuring Psychomotor Development in Early Infancy (Roșca, 1972) and Denver Developmental Screening Test (Frankenburg, 1985) were used along with data extracted from scientific literature to build observation checklists, based on which each participant's developmental level was established. Developmental level was established for five areas: (1) gross motor; (2) fine motor; (3) cognitive; (4) language and (5) social-emotional. Developmental delay in each area was operationalized as the difference between chronological age and developmental age and was established both at admission in and discharge from hospital. The assessment was only performed when baby health and state allowed and special attention was given to avoidance of discomfort during the process.

Infant mental health screening was performed using The Mental Health Screening Tool (children 0 to 5 Years), MHST 0-5, designed by California Institute for Mental Health (2000). The tool was developed by experienced professionals in the field of infant and young children mental health and proved useful for identifying children that need detailed mental health assessment. The screening instrument contains five items; the answer “YES” to any of them implies the need for further more detailed assessment of the child. The items refer to the child’s history (abuse, trauma, neglect, exposure to violence), behavior (uncontrollability and/or passivity, withdrawal) and placement, childcare, education. Though it has the disadvantage of being a less detailed and elaborated instrument, the MHST 0-5 is a cost-effective, easy to use tool for a quick screening of children when admitted in the hospital. The data resulted from the detailed infant mental health *assessment* process obtained by using the DSM-IV-TR (American Psychiatric Association, 2000) are also relevant for the subject under research and will be presented.

Data from medical records, discussion with the pediatrician and the medical staff, as well as some unstructured interviews with family members were collected (demographic variables, children’s medical diagnosis and characteristics, ecological particularities). All participant children had nutrition difficulties when they were first assessed and failure to thrive was established on the basis of their physical recovery after they were admitted in the hospital, given that the ecological variables were controlled for as the same amount and quality of care was provided for each individual child.

The assessment was performed individually for each child, at least a week after admission, during several sessions, after the child was considered adjusted to the new environment and caregivers. Data analysis was performed using SPSS 13.0 for Windows by both descriptive (frequency analysis) and inferential statistics. Statistical tests were selected according to the hypothesis tested and type of data: Pearson’s chi square, Student’s t for independent samples, Wilcoxon signed-rank test (S), Kolmogorov-Smirnov test (Z).

Results and discussion

The average age at hospital admission of children with non-organic FTT in our sample is significantly higher than that of resilient children ($t=2.7$, $p<.01$) and the severity of malnutrition also accounted for significant differences ($\chi^2=9.98$, $p<.05$). As shown in figure 1, most children with first degree malnutrition did not develop non-organic FTT (85.7% of the children in this subgroup), as well as most children with second degree malnutrition (65.5% of the children in this subgroup), while large proportions of the children with II/III and third degree of malnutrition developed non-organic FTT (63.6% and 68.2%, respectively). Thus, a more severe malnutrition is an important risk factor for non-organic FTT. There were no statistically significant differences in the occurrence of non-organic FTT, depending on the participants’ gender.

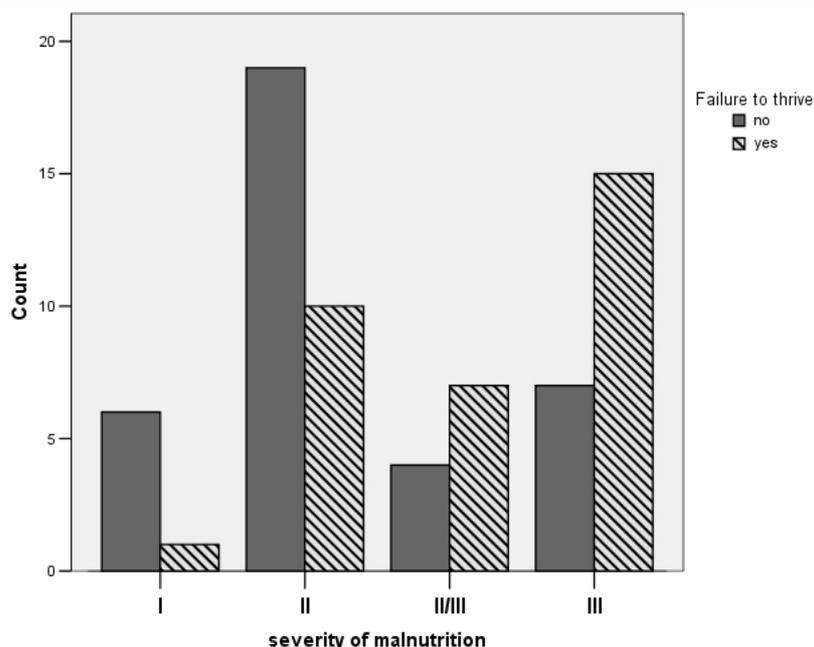


Fig. 1. Frequency of non-organic FTT, depending on the severity of malnutrition

Due to the malnutrition, all children had insufficient weight gain, several presented hypo/ hypertonia, hypotrophy, low immune response to infections, neuromuscular hyperexcitability, dehydration. *Medical disorders* associated with malnutrition were distributed irrespective of the presence or absence of FTT. We could not find associations between FTT and any medical conditions mentioned by previously cited research: 21.7% of all children did not develop FTT and had no other medical condition except the perturbations associated to malnutrition (anemia, lower weight/ height) and 15.9% of them developed non-organic FTT without having any other medical disorder. Medical disorders/ conditions found in children without FTT were: cerebral diffuse hemorrhage, coxofemoral dysplasia, hepatitis, Leiner-Moussous desquamative erythroderma, gastro-esophageal reflux, medical disorders/ conditions found in children with FTT were: anal atresia, cystic fibrosis, hypothyroidism, congenital heart malformation, meningoencephalitis, Bartter syndrome, Pierre Robin syndrome and medical disorders/ conditions found both in children with and without FTT were: scabies, atrepsy (marasmus), infantile encephalopathy, palatoschisis, prematurity, celiac syndrome, malabsorption syndrome, Down syndrome, birth hypoxia. It is impossible to generalize any association between these medical conditions and presence or absence of FTT due to our sample dimension, as most of these conditions were found in one to maximum 8 children.

As for the *hospitalization* period, there were statistically significant differences between children with and without non-organic FTT ($t=2.69$, $p<.01$), the latter needed much longer hospital stay in order to recover. On the other hand, a longer hospital stay may have negative effects on the child's development and growth. Although intervention has best results when it takes place in the child's home environment, inpatient care is justified and has better results in the case of neglected, maltreated, abused and/ or children that suffer from severe FTT forms (Block & Krebs, 2005) as for these children the hospital represents a protective and predictable environment in which they are more likely to thrive than in their home environment.

The results obtained for *mental health screening* of infants and toddlers in our study show that children with non-organic FTT obtained significantly higher scores than those without FTT ($\chi^2=47.76$, $p<.001$). All the children that scored zero for the mental health screening, meaning that no risk for their mental health was identified, did not develop FTT and all the children that scored a maximum of 4 points developed FTT. Most children that scored one point (87.5%) did not develop FTT, while most of those who scored two or three points developed FTT (90.9% and 85.7%, respectively). As the authors recommend, any child who scores at least one point at the screening instrument should be referred for detailed assessment as there is a risk of mental disorders.

Most children with FTT (63.6%) were exposed to abuse/ neglect/ trauma, 60.6% manifested unusual/ uncontrollable behaviors such as excessive crying, floppiness/ stiffness when held, difficult to console, tantrums, self-injurious/ self-stimulation behaviors, 97% manifested withdrawal, passivity, lack of age-appropriate verbal expression, unresponsiveness to caregiver and/ or environment, lack of awareness and involvement with surroundings, while only 12.1% exhibited behaviors difficult to manage by the parent/ caregiver due to limited possibilities, either financial or intellectual, so the child was unable to benefit from a stable environment (figure 2). Our results show that those children with nutrition disorders with higher scores at the screening instrument are at great risk for developing non-organic FTT, but maximum is not necessary for the children to develop FTT, as most of those with this condition scored a total of 2 points at the screening instrument. Intervention provided for these children should consider this risk and detailed mental health assessment should be provided.

Among the *temperamental, behavioral and emotional traits* observed in children with FTT were: absence and withdrawal, avoidance towards interactions with adults/ peers, sadness and fearfulness in the presence of others, intense startle reactions/ stiffness when touched, lack or reduced communication, fussiness, excessive crying and difficulty to soothe, emotional tantrums, high irritability and sensitivity, reduced reactivity, lack of curiosity and interest for environmental stimulation, gaze aversion, stereotype movements, flatness of affect and inexpressiveness. As for the resilient children, we found several different characteristics: apathy due to physical condition, but enjoyment of adult's company; activism, curiosity for exploration of

environment; clinginess, need for attention; sociability, participation in interactions; initiative and interest for interaction with others; cheerfulness; emotional expressivity; easy to soothe when crying; communicative, social smiling; receptiveness, alertness; self-stimulatory behaviors.

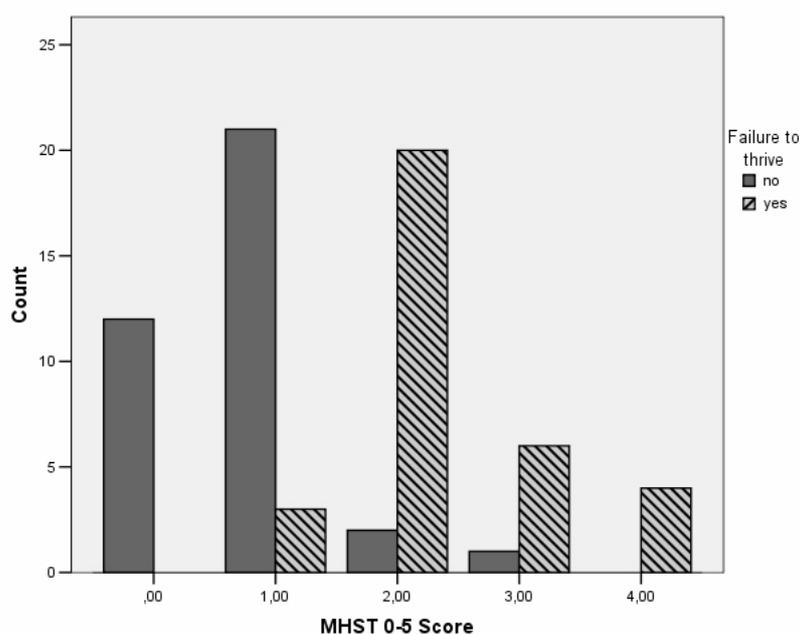


Fig. 2. Mental health screening score for children with and without non-organic FTT

DSM-IV-TR (APA, 2000) mentions several disorders first diagnosed during infancy, childhood and adolescence. Of the total number of children in our sample, 26.1% (14.5% without and 11.6% with FTT) had problematic characteristics that could not be framed in any of the disorders mentioned in the manual, and 17.4% (all without FTT) had no problem behaviors and/ or emotional traits to fulfill a diagnosis in DSM-IV-TR. The rest of the participants fulfilled criteria for different diagnosis mentioned in the manual: 24.6% (2.9% without and 21.7% with FTT) for reactive attachment disorder (RAD) of infancy and early childhood, type inhibited, 17.4% (13% without and 4.3% with FTT) for reactive attachment disorder of infancy and early childhood, type disinhibited, 8.7% (all with FTT) fulfilled the criteria for pervasive developmental disorder (autistic traits), 2.9% (all without FTT) for rumination, 1.4% (without FTT) for stereotypic movement disorder, 1.4% (with FTT) for eating disorder of infancy and early childhood. Thus, our results show that non-organic FTT is associated with severe disorders of infancy and early

childhood and, interestingly, is only associated with the inhibited type of RAD and not associated with rumination. Certainly, given the small number of children with these conditions included in our sample, the results need further investigation. Temperamental traits, environmental factors and conditions could explain the difference between our results and those of other authors.

In order to determine the *developmental areas* most affected in children with FTT we tested the differences between developmental delays at admission and release from hospital for children that acquired and did not acquire the condition. All developmental areas were affected in children with FTT when first assessed at admission, gross motor delay was significantly greater for children that developed FTT ($Z=1.54$, $p<.05$), as well as fine motor delay ($Z=1.45$, $p<.05$), cognitive delay ($Z=1.57$, $p<.05$), language delay ($Z=1.47$, $p<.05$) and most of all the social-emotional delay ($Z=2.28$, $p<.001$). Similarly, the assessment at release from hospital revealed significantly higher delay for children with FTT within gross motor area ($Z=1.79$, $p<.01$), fine motor area ($Z=1.45$, $p<.05$), cognitive area ($Z=1.80$, $p<.01$), language area ($Z=1.83$, $p<.01$) and most of all the social-emotional area ($Z=2.11$, $p<.001$). Thus, it seems that FTT implies perturbations in all developmental areas in infants and young children, but social-emotional and language domains seem most affected.

Our results can be explained in the light of attachment theory, which states that at an early age children thrive in the context of emotional communication with the primary caregiver, and security of attachment is what encourages the child to explore the environment and learn from it. According to the self-determination theory (Ryan & Deci, 2004), relatedness is a basic psychological human need that encourages motivation and development, so if a child's need for belonging is blocked by certain factors (such as separation from mother) or the mother is unable to answer this need (as in the case of most children with FTT) the child's natural tendency toward growth and development may be perturbed.

Each child of the sample was included in an individualized *intervention* plan for sensory-motor, cognitive, language stimulation, attachment-based therapy and Focusing technique, besides the medical care given in the hospital. The intervention targeted the recovery of delays ascertained on different developmental areas, as well as the lessening of long hospitalization effects. Though progress was made by all children without FTT, we found that in the case of these children the delay at release from hospital was not different from the one at admission for gross motor, fine motor, cognitive and social-emotional areas ($p>.05$), but was significantly higher in the case of language ($S=3.44$, $p<.01$), which means that in order to enhance language development, proper linguistic scaffolding is needed in the child's natural environment and the enclosed and limited hospital setting is not enough for him/her to develop communication skills.

The situation of children with non-organic FTT is somewhat different. Despite the intervention, the delay in the areas of fine motor skills and social-

emotional at release was not significantly different from the delay at admission in the hospital ($p > .05$) and the delay assessed on gross motor, cognitive, language areas was significantly higher at release than the one assessed at admission ($S = 2.41$, $p < .05$, $S = 2.92$, $p < .01$ and $S = 4.66$, $p < .001$, respectively), showing that especially cognitive and language development are severely impaired in these children due to their physical condition, mental health, combined with a long stay in the hospital, where stimulation, even if provided, is limited.

Poverty, low cultural level and precarious living conditions were not different for children with and without FTT, the condition was found with similar frequency in all types of *social environments*, but this conclusion needs further testing because most children in our sample came from socially deprived environments: 95.5% of the families were poor, but children coming from families with better financial conditions also developed non-organic FTT, 91% of the families had low cultural level, but FTT was equally found in children coming from families with medium/ high cultural level and 91% of the families had inadequate living conditions, but also children coming from families with proper housing presented non-organic FTT. Thus, as mentioned by above-mentioned authors, the condition is found in children coming from all social environments.

Most of the children included in our study come from similar socially deprived environments, but only a part of them acquired non-organic FTT. We analyzed the *psychosocial stressors* to which children were exposed, besides the above-mentioned low/ absence of family income, low/ absence of proper living conditions and low cultural level. The main risk factor identified in our sample was domestic violence, as 88.9% of the children exposed developed non-organic FTT and other important factors were child's abandonment in the maternity ward (6.1% of the total number of children with FTT and none of those without the condition), long and frequent hospitalization (6.1% of the children with FTT), child neglect (27.4%) due to one of the following: (1) large number of children, (2) maternal illiteracy and single motherhood, (3) adolescent and immature mother, (4) parental intellectual disability, risk of child abandonment (18.2%) due to: (1) large number of children, (2) parental intellectual disability, (3) child's diagnosis of Down Syndrome. Institutionalization was a factor for acquirement of FTT if its debut was at the age of 5 months (one of the children from our sample) and for child recovery without FTT if started at birth (one of the children from our sample). Other factors associated with FTT, found each for one child in our sample were: maternal anxiety, maternal death and parental intellectual disability.

On the other side, factors associated with child recovery from nutrition problems, without acquirement of non-organic FTT were: large family as support network (36.1%), first child of a single mother with an age over 18 years (16.7%), no psychosocial stressors (27.8%), risk of child abandonment due to maternal mental illness, schizophrenia (5.6%). Factors associated with both presence and absence of FTT were: single, intellectually disabled mother and single mother at risk of child

abandonment. Other factors from children's social environment, as well as characteristics that were not assessed or hospital setting and admission without the mother did not allow for them to be observed may explain the difference between children with and without FTT. What surfaces from our investigations is the hypothesis that mother – child bond, independent of social class or family financial conditions, may have a crucial role in child development, as argued by the presence of the above-mentioned factors and their association with either resilience or presence of non-organic FTT.

Conclusions and implications

Our first four working hypothesis were confirmed, while the data we gathered was not enough to reject the null hypothesis in the fifth case. Further investigations on larger samples of children with non-organic FTT, coming from diverse social environments are necessary in order to generalize our conclusions.

The resilience perspective places emphasis on children's strengths and protective factors that can help them overcome difficult situations. By increasing the protective factors for children at risk we can improve the outcomes of interventions that target resilience.

The results show that malnourished children, exposed to psychosocial risk factors can be resilient under certain conditions, mostly related to the environment in which they receive care: social support for the mother and support from extended family, development of child's interest towards the environmental stimuli and towards people, bonding and relating with caregivers, sensory, motor, cognitive and language stimulation, besides the medical care. Children who were exposed to extremely adverse environments, such as those marked by domestic violence, abuse, severe trauma and neglect, children abandoned at birth, children with long and frequent hospitalizations were most likely to acquire non-organic FTT, so intervention should be provided in order to limit the effects of these conditions from a very early age.

Children who are maltreated in their home environment are more likely to develop insecure and confused patterns of relatedness (Iwaniec, 2005) than disorders of attachment. Thus, the social-emotional area, along with language and communication are most affected in children with non-organic FTT. Children develop various attachment styles in order to cope with the disorders they face in their relationships with the family and/ or caregivers. FTT is a condition strongly related to the child's relational network and these connections are important to establish in order to lower the effects of the condition on the child's physical and psychosocial development.

Our results show that children with non-organic FTT are often at risk of clinical disorders, so assessment of their mental health should be considered even at this early age. The mother's mental health should also be carefully evaluated, as it strongly influences the attachment relationship and, thus, the child's development.

Intervention programs designed to approach the enhancement of parental skills, as well as the mother – child relationship, would be useful in order to prevent

the acquisition of this condition. We found that maternal immaturity could be a risk factor, so support for the single, young mothers would also be a prevention method. Social nurseries for mothers in difficulty, day-care centers to help the mother while at work could have a role in helping both mother and baby, so research could be done in order to test their efficiency.

Limitations and future research

Block et al. (2007) consider hospitalized children with FTT as the most complex and extreme cases that struggle with the condition, as many cases are treated in their natural environments. Our study only focused on hospitalized children with FTT, so future research could compare these children with the ones treated in their homes. A more detailed assessment is required for each case with FTT and larger samples should be investigated in order to establish more accurately the associations between various factors that contribute to the acquisition of the condition, as well as its mental disorders correlates.

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