Profiles of Maternal Care Observed in a Group of Brazilian Mothers: an Exploratory Study

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The aim of this study is to characterize profiles of maternal care in a sample of Brazilian mothers, using a cultural-biological perspective. Participants were 315 women who had at least one child younger than six years-old. They were selected from six Brazilian states. In each state, two groups of mothers were studied, one from the capital and one from a small city. They were interviewed and answered scales on allocentrism, social support, adult attachment, and practices of childcare. Mothers' characteristics, the type of context (capital vs. small city), and reported childcare practices were used in a Tree analysis. A Correspondence analysis was performed using the four clusters obtained and mothers' answers regarding their youngest child. Univariate GLM analyses were performed to compare mothers in the four clusters in terms of their scores on the different scales. Four maternal profiles presenting distinctive patterns of association between mothers' characteristics and care practices displayed to the youngest child were identified. We conclude that maternal care is a multi-determined phenomenon and that the method employed in this study can give insights into how the combination of diverse social-biological factors can result in a set of childcare practices.
Keywords: maternal investment, maternal care, Brazil.

El objetivo de este estudio es caracterizar los perfiles de atención materna en una muestra de madres brasileñas, desde una perspectiva cultural-biológica. Las participantes fueron 315 mujeres que tenían al menos un hijo menor de seis años. Fueron seleccionadas en seis estados brasileños. En cada estado, se estudiaron dos grupos de madres, uno de la capital y otro de una ciudad pequeña. Fueron entrevistadas y se les administró la escala de alocentrismo, la de apoyo social, la de apego en adultos, y la de prácticas de cuidado en niños. Las características maternas, el tipo de contexto (la capital vs. ciudad pequeña), y la información aportada sobre prácticas de cuidado en niños, fueron utilizados en un árbol de decisión. Utilizando los cuatro grupos obtenidos y las respuestas de las madres sobre sus hijos más pequeños, se realizó un análisis de correspondencias. Para comparar a las madres en los cuatro grupos, en función de sus puntuaciones en las diferentes escalas, se utilizaron análisis univariados mediante el procedimiento GLM. Fueron identificados cuatro perfiles maternos que presentan patrones distintivos de asociación entre las características maternas y las prácticas de cuidado que se dispensan a los niños más pequeños. Llegamos a la conclusión de que la atención materna es un fenómeno multi-determinado y que el método empleado en este estudio puede proporcionarnos mayor información sobre cómo puede resultar la combinación de diversos factores socio-biológicos, en un conjunto de prácticas de cuidado infantil.
Palabras clave: inversión maternal, cuidado materno, Brasil.

The focus on maternal care has been a major tendency in the psychological literature and in public policies, justified by the main role females play as caretakers (Low, 2005). Cross-cultural and evolutionary psychology have produced evidence that childrearing practices, and beliefs that organize them, can be analyzed both from a biological and a cultural perspective (Burgess & Drais, 1999; Geary, 2002; Keller, 2007; Kramer & Lancaster, 2010). A cultural-biological perspective of maternal care involves considering the interconnection among a number of variables, from evolution to ontogeny (Seidl-de-Moura, Oliva, & Vieira, 2009).

Considering the evolutionary process, parental care, represented by time, resources, and energy devoted to childrearing, has consequences to parents' fitness (Trivers, 1972).This view leads to the expectation that investment in parenting will vary according to variations in fitness payoff. Some variables, such as parents' sex and developmental stage, characteristics of the offspring and ecological conditions are expected to affect fitness payoff of investment, and hence to increment or decrease levels of parental investment (Keller & Chasiotis, 2007; Neill, 2011; Quinlan, 2007).

Mother's age is expected to affect fitness payoff of investment, as it is related to future reproductive prospects. As women get older future reproductive prospects decrease and, as a consequence, the value of current offspring (to mothers' fitness) rises, prompting the display of increased investment (Kramer & Lancaster, 2010; Turner, 2006). Ecological conditions, mainly represented by mothers' access to resources, are also expected to affect fitness payoff of investment. Both financial/material and social resources are expected to affect mothers' investment given the social nature of human life. Increased access to resources has been demonstrated to be related to increased levels of investment (Burgess & Drais, 1999; Quinlan & Quinlan, 2008; Sparks, 2011; Yeung, Linver, & Brooks–Gunn, 2002).

The effect of the interaction among the variables cited above cannot be easily predicted. Breastfeeding, for example, as a measure of maternal investment, has been found to vary with several conditions, such as the mother's nutritional status, work patterns, and cultural attitudes to breastfeeding patterns (Prentice & Prentice, 2005; Quinlan & Quinlan, 2008).

Considering development, life history theory incorporates evolutionary explanations for the timing of life events, including parenting. Parental care is part of a main trade-off that individuals face throughout development to the competitive allocation of resources to somatic (growth and maintenance of physical systems) or to reproductive effort (mating and parenting) (Del Giudici & Belsky, 2011a; Gangestad & Simpson, 2000; Geary, 2002; Kaplan & Lancaster, 2003).

This process seems to operate trough evolutive trajectories oriented by childhood experiences that affect adult attachment styles, with impact in mating strategies and parental care (Belsky, Steinberg, & Draper, 1991; Bjorklund & Pellegrini, 2000). According to these authors, humans have developed mechanisms sensitive to features in the early childhood environment that induce puberty maturation and influence reproductive strategies. In this way, early parental care shapes attachment behavior and functions as a cue to the environment safety. Living in high stress homes, with insecure attachment, and the father's absence, are factors that together could lead children to reach physical maturity earlier, to be sexually promiscuous, and to form unstable pair bonds, that is, to take a "quantity over quality" perspective. In contrast, children from low-stress homes, securely attached and with the father's presence would tend to reach puberty later, delay sexual activity, and form more stable pair bonds, taking a "quality over quantity" perspective. The two trajectories seem to have as consequence different patterns or styles of relationship or adult attachment and may be related to maternal care for their children. Del Giudice and Belsky (2011b) have proposed that the different attachment styles may have different functions and hypothesized that, for example, anxious attachment could have a function, among others, of maintaining close contact with the kin network. Thus, mothers with different patterns of care and styles of attachment may have different access to networks of social support.

This proposed model of the effect of quality of early development in socialization has been supported by the literature. Recently, the model has been revised considering that the strategies established early in development may respond to environmental cues in different stages in the life cycle; that specific aspects of the environment may have diverse effects on the strategies adopted, and that fathers and mothers' care behavior respond in varied forms to characteristics in the environment (Del Giudici & Belsky, 2011b).

Not only early development affects socialization, but socialization contexts also affect development through maternal goals. Keller and her group (Abels et al., 2005; Keller et al., 2006; Kärtner, Keller, & Yovsi, 2010) have demonstrated that, although a transcultural repertoire of parenting components exists, different combinations of these components are associated to specific eco-cultural contexts. The eco-cultural context is characterized by the place of development (rural or urban), and by mother's economic conditions. Urban, middle class, well educated mothers typically present independent socialization goals for their children, and show the prevalence of a distal maternal style that includes face-to-face interactions, object stimulation, contingency, and warmth in response to positive infant cues. Rural, low class, uneducated mothers typically present interdependent socialization goals and show a proximal maternal style that includes body contact and stimulation, contingency, and warmth, especially toward infants' negative cues. The authors propose that these associations are

adaptive, in the sense that they promote children's insertion in their developmental contexts, and that evolved neuropsychological mechanisms underlie the children's sensitivity to particular maternal styles (Keller et al., 2005).

Based on the theoretical conception of maternal investment and care and the evidences that different strategies are related to conditions in the environment, the child, and the mother, we propose an exploratory-descriptive approach of patterns or profiles of care. It seems that if we want to understand how and why women care for their children, we should take into account different components that might be involved in such care, including biological, psychological, and social factors, in specific contexts.

Brazilian context is particularly challenging, mainly because of its cultural heterogeneity and economic inequality, and the impact these characteristics have in the ways of thinking and raising children. Brazil has a population of more than 184 million inhabitants (IBGE, 2008), and is the largest country in South America. It is composed by five geographic regions that vary socially, economically and culturally. Although the country has an HDI of .81, according to the Human Development Report (UN, 2005), it has a Gini index of 56.7, which demonstrates high income concentration. It has a low social mobility compared to developed countries (Ribeiro & Scalon, 2001), and a low educational level, uneven when different regions of the country are compared.

State capitals in Brazil have been characterized as poles of economic development and as providing diversity of services and facilities. Large cities provide conditions for the development of autonomous goals, involving an increase in competition, less social support coming from extended families, and more individual isolation (Triandis, 1989). This could have consequences to mothers' beliefs and practices of child rearing (Kobarg & Vieira, 2008; Seidl-de-Moura et al., 2008; Vieira et al., 2010).

We believe that the description of patterns or profiles of care can contribute to the literature on childrearing and may be relevant to the development of programs to promote health and development for women and children. Based on the literature, we took into consideration *mothers'* variables such as age (Keller & Chasiotis, 2007; Kramer & Lancaster, 2010; Turner, 2006), educational level and social class (as indications of socio-economical conditions) (Abels et al., 2005; Kaplan & Lancaster, 2003; Sparks, 2011; Yeung et al., 2002; Zortéa & Tokumaru, 2010), style of relationship (adult attachment) (Del Giudice & Belsky, 2011b), and relationship to the family of origin (Keller et al., 2006); and variables of the *context,* such as size of the city they live (Seid-de-Moura et al., 2008; Vieira et al, 2010); and reported social support (Keller & Chasiotis, 2007; Martins et al., 2009; Silva & Tokumaru, 2008). We contrasted these variables to the ones related to the type of care provided to their child (i.e. breastfeeding, prenatal care, stimulation) and to one indicator of the child's outcome (weight at birth).

We hypothesize that different patterns would be observed. Some mothers would show less practices of investment or care in terms of planning the pregnancy and breastfeeding, in contrast to others; mothers' age, educational level and social class (socio-economic status) would be relevant to differentiate these two contrasting patterns. The first group would include mothers with a more insecure style of adult attachment, and the second mothers of a secure style of attachment. The two main patterns are expected to be related to different organizations of social support. Although we expected to find a relationship between mothers' socialization context (place of living) and maternal styles, we had no specific predictions related to the amount of investment provided to their children in the different contexts.

Method

Participants

Participants in the study included a convenience sample of 315 women from 18 to 49 years-old (M = 30.92, SD = 5.88, two thirds of them are between 23 and 35 years-old), who had at least one child younger than six years-old (M = 1.69, SD = .94). They were originally from six Brazilian states that represent five of the six geographic regions of the country. The distribution was as following: 12% from Pará, 17.1% from Bahia; 13% from Rio de Janeiro; 14.6% from São Paulo; 26% from Santa Catarina; and 16.5% from Espírito Santo. In each state, two groups of mothers were studied. One group included women from the State's capital: Belém (Pará), Salvador (Bahia), Vitória (Espírito Santo), Rio de Janeiro (Rio de Janeiro), São Paulo (São Paulo), and Florianópolis (Santa Catarina). The other group included women from cities with less than 23,000 inhabitants, and distant at least 200 km from the nearest large city. There were no significant differences between the number of children of mothers from State Capitals (M = 1.66, SD = .98) and small cities (M = 1.72, SD = .89). The distribution by social class is not representative of the Brazilian population. The groups studied are somewhat biased, over-representing higher classes and under-representing Class D (it has no member of Class E). In comparison to the 5% of Brazilian inhabitants in Class A, we had in our sample 13.7% of the participants belonging to this class; for Class B, the proportion in the population is 24%, and we had 33.3%; for Class C, the numbers are 33% and 43.5%, respectively, and for Class D, 25% and 9.5%.

Instruments and variables

Socio-demographic information - Data on participants' age, educational level (years of schooling), place of residence (capitals vs. small cities), social status as evidenced by their

social-economic class, from A (the highest) to D (lowest), hours worked per day and number of children were collected. Social class is considered a family characteristic and it was evaluated by the Standard Pattern of Economic Classification of Brazil/2008 (ABEP, 2008). The index uses the educational level of the family head, as well as indicators of "domestic comfort" (number of bathrooms, domestic servants, and number of household appliances). Nationally, Class A has an average family income 15.67 times higher than the national minimum wage; Class B, 4.85 to 15.66 times higher than the minimum wage; Class C, 1.75 to 4.84 times higher than the national minimum wage, and Class D, 1.17 to 1.74 times higher than the national minimum wage (ABEP, 2008).

Childhood life quality - Participants were requested to rate their family life quality during childhood, answering the question: How do you assess the environment of your family at the time you were a child? Was it tranquil, less tranquil or extremely difficult or troubled? They responded on a five point scale ranging from 1 (very tranquil) to 5 (very difficult).

Adult attachment - The Adult Attachment (AA) Scale (Collins & Read, 1990), translated and adapted, was used general Cronbach's Alfa of .84. The Scale has 18 items comprising three subscales: *Proximity,* assessing comfort with closeness and intimacy; *Trust,* which assesses the degree to which the person relies on others and on their availability; and *Anxiety / Insecurity,* which assesses anxiety in relationships, such as fear of being abandoned or not loved. The respondent is asked to indicate how much each statement is related to her in a Likert scale ranging from 1 (It has nothing to do with me) to 5 (It has everything to do with me). Examples of the items in the scale are: a) I find it relatively easy to approach people (Proximity); b) I find it hard to trust others (Trust); and c) Many times I get worried thinking if my loving partner really loves me (Anxiety/ Insecurity). The score for each subscale was calculated; the values assigned to items were summed and divided by the number of items.

Practices of child care - This scale was constructed based on the component model of parenting by Keller (2007). It was intended to measure five of the parental care systems described by this author: primary care, body contact, body stimulation, object simulation, and face-to-face interaction. Factor analysis resulted in two factors (not five), interpreted as: primary care (basic care, including providing conditions for bonding), and stimulation (mostly cognitive and social). Cronbach's coefficients ranged from .68 to .83 (Martins et al., 2010). Mothers were asked to rate each of the items on a five-point *Likert* scale of how frequently they perform each one of the activities with their child, from 1 (never) to 5 (forever). Examples of items are: "To console when he/she is crying" (primary care), and "To hang toys in the crib" (stimulation).

Social support - A Brazilian version of the Social Support (SS) Scale (Griep, Chor, Faerstein, Werneck, & Lopes, 2003) was used. This scale has 19 items, including five dimensions of social support: Material (availability of people to provide material and logistic help), Affective (availability of people to provide physical demonstrations of love and affection), Emotional (availability of people to provide positive expressions of affection, understanding and feelings of confidence), Positive social interaction (availability of people to have fun or to relax with), and Information (availability of people to give advice or guidance). For each item the respondent must indicate how often each type of support is available in a five-point scale (ranging from "never" to "always"). The scale showed good internal consistency, estimated using the Cronbach's alpha ranged from .75 for material support to .91 for positive social interaction in the test, and from .86 (material support) to .95 (positive interaction) in the retest. Examples of items are: If you need, how often can you rely on someone: to take you to the doctor if you need (material support), to show affection for you (affective support), to hear when you need to talk (emotional support), to give you good advice in a crisis (informational support), to have fun with (positive social interaction).

Maternal investment and care for the youngest child. This instrument includes a set of questions related to mothers' variables, such as desiring and planning for the child, and the presence of care behaviors (prenatal care, breastfeeding, providing inoculations and enrolling in nursery school). The youngest child's variables considered were sex and weight at birth.

Family Allocentrism - Idiocentrism scale. This scale is composed by 21 statements that investigate a set of personal values, which allow identifying the respondents' proximity to their family members. Participants were asked to indicate their agreement with each item on a five-point scale ranging from 1 (not at all) to 5 (completely). Examples of items are: "The opinion of my family is important to me" and "my happiness depends on the happiness of my parents". The scale had Cronbach's alpha of .89 for the entire sample. The original scale from Lay et al. (1998) was translated to Portuguese, submitted to the usual procedure of back-translation, and adapted to contemplate regional differences among participants.

Data Collection

The project is part of a larger study developed by a group of researchers from six public universities in the States of Bahia, Espírito Santo, Pará, Rio de Janeiro, Santa Catarina and São Paulo. It followed Brazilian regulations for research with Human Subjects, and it was approved by ethical committees in all the universities involved in the project. Participants were recruited through daycare centers, nursery schools, hospitals and pediatricians in the different States. They were invited to participate and, if they accepted, signed an Informed Consent Form. Data was collected
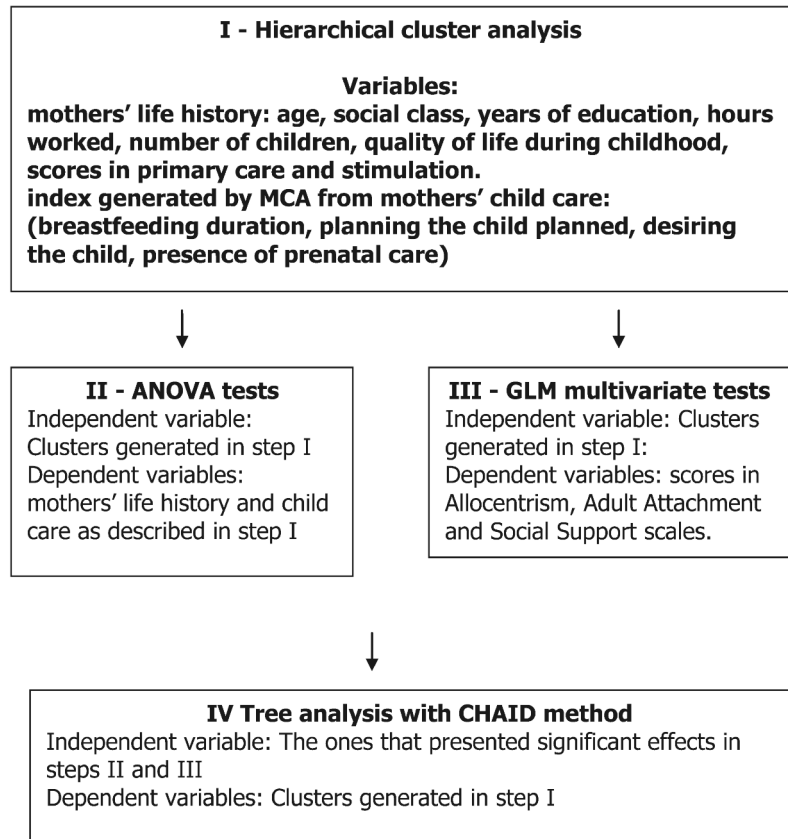
Figure 1. Steps used to generate and analyze the four profiles of care.

Data reduction and analyses

Local databases were transferred to a general spreadsheet and submitted to various verifications by different research teams. Analyses were conducted in four steps, described in Figure 1.

The *first step* aimed at searching for an initial description of profiles of investment through a hierarchical cluster analyses. With this goal, some variables related to mothers' life history and to child's care were selected. The variables related to mother's life history were: place of residence (capitals x small cities), mothers' age, social class, years of education, number of children, number of hours worked/day, scores in reports of "Primary care" and "Stimulation", and the answer to the question about quality of life during childhood. These were dummy or continuous variables adequate to the cluster analyses. The variables related to child care were categorical: duration of breastfeeding (three levels); whether the child was desired; whether the child was planned, and whether the mother

through individual interviews, generally at the participants' homes by local teams of research assistants. In the small cities, a group (of researchers?) traveled and conducted data collection within a short time period of usually a week.

received prenatal care. A Multiple Correspondence Analysis (MCA) was performed using the above variables providing their association in a bi-dimensional perceptual map, created from a proximity matrix of the variables. The analysis resulted in an index of association of each participant to the set of variables used. This index was added to the database as a continuous variable adequate to the cluster analyses. This variable and those from mother's life history were used in a hierarchical cluster analysis (see Sourial et al., 2010).

In the *second step* we tested how each one of the variables used in the hierarchical cluster analysis contributed to the clusters' discrimination and characterization, performing a series of ANOVA tests. In the *third step* we tested the difference among the clusters in Allocentrism, Adult attachment - AA (proximity, dependency and anxiety), and social support – SS (material, affective, emotional, informational and interactional), using a series of Multivariate GLM analyses. Finally, in the *fourth step*, the clusters were used as dependent variables in a Tree analysis, based on CHAID method, using as independent variables the ones that presented significant effect in the analyses of steps 2 and 3. The CHAID method allows verifying the predictive variables for the clusters obtained in the hierarchical cluster analysis, as well as their ranking.

Table 1

Association between investment in the youngest child and four clusters or profiles of investment

Investment in the youngest child		Cluster (% of occurrence)	Adjusted residual	χ^2	*p*
Breast feeding	< 6 mo	1 (60.5%) / 4 (59.3%)	3.2 / 2.8	12.23	.003
	> 6 mo	2 (59,8%) / 3 (50,1%)	2.5 / 2,1		
	Not				
Was the child desired?	Yes	4 (83.7%) / 1 (81.2%)	4.6 / 2.9	26.31	.001
	No				
Was the child planned?	Yes	4 (67.5%)	3.7	16.65	.001**
	No	1 (63.2%)	2.7		
Prenatal Care	Yes	2 (96.2%) / 3 (89.6%) / 4 (98.7)	5.3 / 4.1 / 5.8	22.33	.001**
	No	1 (66.1%)	3.1		

Results

The hierarchical cluster analysis yielded four clusters. The results of the ANOVAs tests showed that the variables number of hours worked/day, answer to the question about quality of life in childhood, years of education and score in primary care in the practices instrument did not present differences among the clusters, and thus were excluded from the model. Participants' scores in MCA analysis using the variables related to answers regarding the youngest child were relevant to cluster formation. Mothers in Cluster 1 have nursed their youngest children for less than six months, have desired but not planned them, and had not had prenatal care. Mothers included in clusters 2 and 3 have nursed their children longer than six months, and have had prenatal care. No association was found between clusters 2 and 3 and the fact of the child being desired or planned. Finally, mothers from Cluster 4 have nursed their children for less than six months, reported having desired and planned them, and received prenatal care. Table 1 summarizes these results.

Multivariate GLM analyses were performed using clusters as factors and the scores on stimulation, allocentrism, the three scores of AA, and the five scores of SS as dependent variables. Effects of clusters on the dependent variables were observed for stimulation scores, allocentrism scores, and the three scored of AA scale (proximity, trust and anxiety). The results of Bonferroni's post hoc tests indicate that for the scores on stimulation, Cluster 1 has the lowest mean (4.05), which is significantly different from clusters 2 (4.23) and 4 (4.29). Regarding the scores on allocentrism, it was found that Cluster 2 (3.51) had higher means than Cluster 1 (3.28). Finally, considering the scale for adult attachment, we found lower mean values in the proximity style for Cluster 1 (3.84) in comparison to Cluster 3 (4.12) and 4 (4.21). For trust style, mean scores are higher for Cluster 3 (3.35) in comparison to clusters 2

(3.07) and 1 (2.86), and for anxious style Cluster 1 had the highest mean (2.81) when contrasted to clusters 4 (2.06) and 3 (2.25).

There were no significant differences in reported material, interactional, and informational support. However, significant results were observed for affective support, $F(3, 311) = 3.72$, $p = .12$, Observed power = .80. Post-hoc analyses indicated that mothers from Cluster 1 ($M = 4.38$, $SD = .84$) report less affective support than mothers from clusters 3 ($M = 4.68$, $SD = .61$) and 4 ($M = 4.75$, $SD = .55$). Significant results were also found for emotional support, $F(3, 311) = 4.19$, $p = .006$, Observed power = .85. Mothers in Cluster 1 ($M = 3.86$, $SD = 1.03$) had lower means than mothers in clusters 2 ($M = 4.24$, $SD = .85$) and 4 ($M = 4.43$, $SD = .85$).

The predictor variables for the clusters according to the tree analysis were: mothers' age χ^2 (6, $N = 305$) = 497.02, $p = .001$; social class χ^2 (2, $N = 305$) = 11.68, $p = .001$; place of residence χ^2 (3, $N = 305$) =20.61, $p =.001$, and child's weight at birth $F(3, 310) = 5.39$, $p = .005$. The model was 83.9% correct when applied to the data matrix.

The variable mothers' age discriminated the clusters as the following: 100% of the cases in Cluster 1 were less than 27 years-old; 75.22% of the cases in Cluster 2 were between 27 and 32 years-old, 93.10% of the cases in Cluster 3 were between 32 and 38 years old and 100% of the cases in Cluster 4 were over 38 years-old. In relation to social class, Cluster 1 concentrates most of the participants in class C (87.9%), while clusters 2 and 3 concentrate 78.5% of mothers from class B. Cluster 4 did not present significant associations to any social class group.

In relation to the place of residence, 56.6% of the participants who live in small cities were included in Cluster 2 (3.6 residue), and 67.8% of the participants who live in state capitals were part of Cluster 3 (2.4 residue). No association was found between this variable and clusters 1

or 4. In relation to the child's weight at birth, the tree analysis presents a significant difference between the mean weight of children from mothers in Cluster 1 (3.20 ± .57 Kg) and Cluster 4 (2.87 ± .77 Kg).

The clusters described the total of 315 Brazilian women from state capitals and small cities interviewed in the study. They reflect the variety of strategies in maternal care and investment. Based on the analyses performed, we propose that each cluster obtained indicates a profile of maternal investment.

P1. Mothers with lack of resources and high reproductive potential:

Women younger than 27 years-old (Mean age = 23.82; *SD* = 2.04), from class C, who desired but not planned for their youngest children, did not have prenatal care, had babies weighting less than 3.2 kg in average, and nursed the babies for less than six months. They present lower scores on allocentrism than mothers from P2 and the lowest scores on stimulation. They also present lower scores in proximity and dependency than mothers from P3 and P4, and presented the highest mean scores on anxiety. They report less affective and emotional support than mothers from the other groups (*N* =77; 24.4% of the total).

P2. Mothers from small cities with average resources and average reproductive potential

Women between 26-32 years-old (Mean age = 29.17; *SD* = 1.74), from small cities and predominantly from class B. They did not have prenatal care, their youngest children were born weighting around 3.2 kg, and were breastfed for more than six months. These women have average scores on stimulation. They presented no distinct style of adult attachment (*N* = 113; 39.5% of the total).

P3. Mothers from state capitals with average resources and average reproductive potential

Mothers between 32-38 years-old (Mean age = 35; *SD* = 1,75); predominantly from class B and state capitals who had prenatal care; their youngest children were born weighting around 3.2 kg, and were breastfed for more than six months. Women had average scores on stimulation and the highest scores on style of trust and proximity (there were no significant differences in relation to P4) and the second lowest mean in anxiety (*N* = 87; 27.6% of the total).

P4. Mothers with high level of resources and low reproductive potential

Mothers older than 38 years-old, who had planned and desired their youngest children; they had prenatal care, their children were born with average weight of 2.8 kg, and were breastfed for less than six months. These mothers had the highest scores on stimulation, the lowest mean scores on anxiety, the highest on proximity, and the second highest scores in trust (*N* = 38; 12.1% of the total).

Discussion

Based on the literature, our hypotheses in this study were that different patterns of investment and care would be observed in this group of Brazilian mothers. Our initial expectation was to find two general patterns related to mothers' practices of investment or care in terms of planning the pregnancy and breastfeeding. We also hypothesized that mothers' age, educational level and social class would be relevant to differentiate these patterns, and that they would be related to diverse organizations of perceived social support. In general, our results confirm and expand these hypotheses. We did find patterns of investment and care, but they could be differentiated into four and not two profiles, although we observe that P1 and P4 are the contrasting profiles we expected to find, while P2 and P3 are more intermediate patterns.

In general, Trivers' theory (1972) predicts the relationship between available resources and amount of energy allocated to offspring. Our finding regarding the four groups suggests that the quantity and quality of maternal care in contemporary conditions may be sensitive to a broad set of variables, producing a variety of patterns. It was found in our study that mothers' age, social-economic conditions (social class), and place of residence showed significant association to planning and desiring children, looking for prenatal care, nursing period and the child's weight at birth. These results support the adoption of a cultural-biological perspective in the study of maternal care (Seidl-de-Moura et al., 2009), demonstrating that a variety of factors can be associated to different patterns of care, in accordance to Keller and Chasiotis (2007) proposal. Two variables included in our initial model have not shown discriminating value. One of these variables was the mothers' quality of life in childhood. Although this is an important variable in Life History Theory, it is possible that there was not significant results because of the way it was assessed, through a single question under the format of a Likert scale. The second variable about which our expectations were not confirmed was mother's educational level. One possible explanation for this result is that the evaluation of social class was more comprehensive and was able to tap the mothers' socio-economic resources more reliably than the question about how many years she had of schooling.

The profiles found in the present study indicate that no individual factor can singly explain variations in maternal investment. However, it seems that some variables have more influence than others. For example, age was a discriminating variable, corroborating the prediction made by Parental Investment theory and authors (Keller & Chasiotis, 2007; Kramer & Lancaster, 2010; Turner, 2006). We observed that as reproductive potential decreases, maternal investment increases, since mothers in P2 and P3 profiles invested more than younger mothers in P1, and

less than older mothers in P4, at least in one of the measures (stimulation scores).

Social class, as an indicator of socio-economic conditions, was also a significant variable, in accordance to literature (Abels et al., 2005; Sparks, 2011; Yeung et al., 2002). We also found that different patterns of attachment were related to these profiles, confirming expectations of Belsky and colleagues, among others (Belsky et al., 1991; Del Giudice & Belsky, 2011b). Adverse conditions may represent risks for children's survival and development, and they may signal the need to increase protective factors, such as nursing and stimulation, and to decrease the effect of risk factors, such as lack of knowledge and economic resources.

Another important variable was the place of residence. Studies have showed that parental practices and values are modulated by the size of cities (Seidl-de-Moura et al., 2008; Vieira et al., 2010). It has been found that mothers from state capitals valued equally autonomy and interdependence, while mothers from small towns valued more inter-dependence - in both practices and socialization goals – (Vieira et al., 2010). Furthermore, it has been noted that mother from industrialized contexts have less children and become mothers for the first time older in relation to mothers from not industrialized contexts (Keller, 2007).

The profiles obtained in the present study are congruent with these data, although it is possible to have a more complex comprehension of maternal care with the identification of four profiles care. For example, the first profile reveals that being a young mother, with high reproductive potential, in lower social classes is associated to both low social engagement and low maternal investment, a result congruent with parental investment theory (Trivers, 1972). Mothers in this profile seem to face raised costs because of low access to resources (financial and social) and, as predicted, presented lower levels of investment. These lowered levels were associated to a negative outcome, as measured by the child's weight at birth. We may speculate some approximation to Belsky's model (Belsky et al, 1991, Del Giudice & Belsky, 2011a), regarding the strategies displayed by individuals in environments with low social support. Mothers in Profile 1 presented the lowest scores on Family Allocentrism, sub-scales of Adult attachment and Social support. These mothers are mainly from social class C, probably raised in families from the same social class. The proposed effect of mother's childhood environment in maternal investment has implications for considering intergenerational effects. Contrary to our expectations, we did not find significant results in the variable "quality of life in childhood", as discussed above. However, mothers in profile 1 seem to have developed an insecure attachment during their childhood in an environment characterized by lowered access to resources. This has resulted in a low socially engaged adult, with a quantitative reproductive strategy, living in the same environment of lowered access to resources. In consequence,

we can expect that children raised by these mothers will have enhanced chances of replicating their mothers' pattern.

Profile 2 is composed by mothers from small cities with average resources and average reproductive potential. They are older in average than the ones in P1, from small cities and predominantly from class B. Although they are not from low socio-economic conditions, they did not have prenatal care, but they nursed their children longer than mothers from P1, and invest in their human capital as indicated by their average scores on stimulation. Thus, what we can observe is a pattern that is average in general. Mothers were not from adverse contexts, and they seem to care for their children nursing and stimulating them.

The main differences between mothers from P2 and P3 are their age, the place of residence and an association of mothers in P3 to higher scores on trust and proximity, and lower scores on anxiety. Differences in attachment styles and age between the profiles may be the result of differences in ecological conditions, including beliefs and practices culturally sanctioned. Keller and her group (Abels et al., 2005; Kärtner et al., 2010; Keller et al., 2005; Keller et al., 2006) have found differences between rural and urban contexts in the structuring of parenting that have implications in self development. Thus, one can imagine that this developmental path has a consequence in attachment styles between people in adult life. However, these differences are reflected in the investment made in their children only in terms of presence (P3) and absence (P2) of pre-natal care, since mothers in both groups nursed their children more than six months and had average scores of stimulation.

At last, profile 4 reveals older mothers, with low reproductive potential and high social engagement (as measured by social support). They showed high investment in child's stimulation, but low investment in nursing (duration). It is possible to think that mothers in this group are women with professional careers who have postponed motherhood, which indicates a qualitative investment style. In this situation it is perhaps understandable that they expect to spend little direct care to their children, since they have access to services and conditions for the investment to be carried out indirectly, such as by artificial feeding and nannies (Keller, 2007).

Mothers from profile 4 have planned and desired their youngest children and have presented the highest scores in stimulation and a secure attachment style. However, their children were born with the lowest average weight and were breastfed for less than six months. We cannot entirely provide an interpretation for these findings, but results on breastfeeding duration may have been influenced by the way we treated this variable (in three levels only, and not in actual duration), and related to several other factors (Prentice & Prentice, 2005; Quinlan & Quinlan, 2008). Although they breastfed their babies for less time, mothers from profile 4 stimulated their children's development more than mothers in the other profiles.

Conclusions

This is an exploratory descriptive study and we are aware of its limitations. First, although diverse, we do not claim the studied group to be representative of Brazilian mothers. Even with this consideration, one limitation is the relative homogeneity of this sample, with the absence of extreme cases of mothers who did not have the minimal conditions to care for their children. We have also focused on the youngest child. Different results could be observed with the oldest one, in the case of mothers with more than one child. Another limitation was the measurement of the indicators of investment. We asked about breastfeeding as a categorical variable (yes, six months or more; yes, less than six months; and no). This form of evaluation may not have captured the complexity of qualitative variations in breastfeeding. Most of the variables are evaluated through mothers' self reports and this may have biased the results in some ways. Finally, the target child had been defined as a child "younger than six years old", and we are aware that this categorization involves a large age range. Thus, there may be differences in mothers´ recollections related to their children's age.

We believe that this study has some merit and represent a contribution to the formulation of hypotheses to be tested in future studies. We bring evidences from a Brazilian cultural context, capturing some of its variety by including mothers from different cities in a large country. We offer different patterns of care, and we can hypothesize that the variables that discriminated the groups may be indicators of investment. We have observed that the conditions of living in a small or a large city do not play a significant role in the kind of care mothers provide to their children, although mothers from State capitals seem to have a more distinct pattern of secure attachment, one aspect that discriminated the two most extreme groups, 1 and 4.

Overall, our results corroborate the idea that maternal investment and practices of care are multi-determined phenomena. Mothers' variables such as their age and the attachment style they have developed in childhood are important. At the same time, variables of their present context, such as their socio-economical condition expressed on social class, and the availability of social support cannot be ignored. The method employed in the present study can give insights into how a combination of factors results in different child care behaviors, In order to further improve it we need better measures or evaluations for some of the predictor variables (i.e. educational level) and target variables (i.e. nursing), and the construction of more complex models to be tested, based on theory and on the literature.

Finally, we think that our study can also contribute to the development of intervention procedures and health promoting social policies. The description of profile 1, for instance, deserves a special consideration. We believe that mothers in this profile present characteristics that indicate them to be potential targets for social programs aiming at promoting health to young underpriveleged women and their children.

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