

Tipo de parto y sensibilidad materna: Efectos en el desarrollo socioemocional de niños y niñas al año de edad

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Resumen

La infancia temprana es un periodo de gran relevancia en el desarrollo socioemocional infantil; de hecho, es donde se sientan las bases del desarrollo futuro. En este sentido, las adquisiciones durante el primer año de vida son predictores importantes de las habilidades sociales y emocionales futuras, de modo que la sensibilidad materna, según evidencia respecto a sus efectos en el desarrollo socioemocional del niño, ha demostrado ser un aspecto fundamental durante este periodo. Teniendo esto en cuenta, y considerando la relevancia de dicha competencia, así como el alza mundial y nacional en las tasas de cesárea y los posibles riesgos asociados al tipo de parto vivenciado, el presente estudio tuvo como objetivo analizar la influencia de la sensibilidad materna y del tipo de parto en el desarrollo socioemocional infantil al año de edad. Para ello, se estudió una muestra no probabilística intencionada de 91 madres con sus respectivos hijos o hijas —de distinto nivel socioeconómico— que asistían a salas cuna públicas o privadas en la ciudad de Santiago, Chile, por medio de dos instrumentos: la *escala de sensibilidad del adulto* (ESA) y la *functional emotional assessment scale* (FEAS). En general, los resultados no mostraron diferencias en el desarrollo socioemocional de los niños según el tipo de parto, aunque sí se pudo apreciar una relación entre una mayor sensibilidad materna y un mayor desarrollo socioemocional de los niños al año de edad. Al final se discuten las implicaciones de promover la sensibilidad materna con el fin de apoyar un óptimo desarrollo socioemocional en los infantes. *Palabras clave:* tipo de parto, sensibilidad materna, desarrollo socioemocional, infancia temprana.

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Mode of Delivery and Maternal Sensitivity: Effects on the Socioemotional Development of Children at One Year of Age

Abstract

Early childhood is a period of high relevance in children's socioemotional development, establishing the basis for future development. Acquisitions during the first year of life are significant predictors of future social and emotional skills. During this period, maternal sensitivity is also essential, and there is evidence regarding its effects on the socioemotional development of the child. Considering the relevance of this competence, together with the global and national increase in cesarean rates and the possible risks associated with the type of delivery experienced, the influence of the type of delivery and the maternal sensitivity in child's socioemotional development at one year of age was analyzed. For this, an intentional non-probabilistic sample of 91 mothers with their respective children of different socioeconomic levels, who attended public or private nurseries in the city of Santiago, Chile, was studied. The instruments used were the Adult Sensitivity Scale (ESA) and the Functional Emotional Assessment Scale (FEAS). The results showed no differences in the children's socioemotional development according to the type of delivery. However, it was possible to observe an association between a higher maternal sensitivity and a more significant socioemotional development on children at one year of age. The implications of promoting maternal sensitivity are discussed to support optimal socioemotional development in infants.

Keywords: type of delivery, maternal sensitivity, socioemotional development, early infancy.

Introduction

Socioemotional development is understood as the social and emotional functioning of the human being, which includes the capacities of self-regulation, attachment, emotional cues, and signaling, among others (Greenspan, DeGandi, & Wieder, 2001). It requires the child to develop the ability to experience, regulate and express emotions in an appropriate way through safe experiences with their caregiver (Palmer et al., 2013). Among the most relevant milestones of socioemotional development around one year of age are the incorporation of desires and purpose into behavior, the integration of different senses and the preverbal recognition of gestures intimately related to emotions; a deficit of the latter is associated with psychological problems and delays in early learning (Greenspan et al., 2001).

Socioemotional development during the first year of life is an important predictor of later socioemotional development. At the same time, studies have shown that children have adequate socioemotional development upon entering school have better academic skills, are better adjusted and have a decreased risk of problems and involvement in violence at school (Berger et al., 2009; Domitrovich, Durlak, Staley, & Weissberg, 2017). Therefore, the achievement of adequate early socio-emotional skills represents a basic aspect of both human development and preparation for life (De Andrés, 2005).

Given the relevance of early socioemotional skills, the study of factors that predict the development of these skills in early childhood provides information about important

aspects to promote at this life stage and informs the development of public policies. Among the factors that predict socioemotional development in children, the characteristics of parents, such as their self-regulation, temperament and health status, and the relationships between parents and children, parenting behaviors and the family environment together contribute to the development of self-regulation in the child and are of great importance in early childhood (Kiss, Fechete, Pop, & Susa, 2014). Among these factors, the quality of the maternal affective bond with the child stands out, fulfilling an essential function at 12 months of age (Simó & D'Ocon, 2014). This bond is established during the first year of life and contributes to the development of self-regulatory skills in the child (Farkas, Vallotton, Strasser, Santelices, & Himmel, 2017).

In the Chilean context, parental skills such as sensitivity and mentalization, together with the family socioeconomic level and the sex of the child, have also proven to be relevant predictors (Farkas et al., 2017). However, in Chile, there is a lack of studies that address the relationship between early promotion of and intervention in parenting skills, such as maternal sensitivity, and the socioemotional development of the child.

Maternal Sensitivity

Maternal sensitivity is understood as the ability of a mother to adequately detect her child's signals and communications and to respond to them promptly and effectively (Ainsworth, Blehar, Waters, & Wall, 1978; Santelices et al., 2012). This is consistent with Bowlby's attachment

theory (1969), in which the central factor in development is that the caregiver responds to the infant's needs and behavior so that the child can regulate his or her emotions and feel secure (Morera, Santelices, & Farkas, 2012); this contributes to the child's adaptation (Bornstein & Putnick, 2012) as well as his or her social, cognitive, and emotional development (Bordoni, 2018).

The affective quality of early mother-child interactions is of utmost importance for the child's cognitive and socioemotional development and can predict indices of cognitive, psychomotor, linguistic, academic and socioemotional development (Kopystynska, Spinrad, Seay, & Eisenberg, 2016; Moed, Dix, Anderson, & Greene, 2017; Simó & D'Ocon, 2014). In addition, the development of socioemotional skills during the first year of life allows the child to organize and build an internal working model to represent the reality of the relationship and to generate expectations of how to behave in interactions with the adult and thus secure a higher level of protection (Atkinson et al., 2000).

Maternal sensitivity is a skill that is strongly related to contextual variables, such as family socioeconomic status (SES) (Bornstein, Hendricks, Haynes, & Painter, 2007) and family income (Pelchat, Bisson, Bois, & Saucier, 2003). In addition, the mother's educational level is an important predictor of this skill (Doesum, Hosman, Riksen-Walraven, & Hoefnagles, 2007; Pelchat et al., 2003).

In Chile, it has been found that higher socioeconomic, educational and occupational levels are associated with a higher probability that the mother will have higher sensitivity to the child when the child is one year old (Santelices et al., 2015). On the other hand, mothers with low SES show less sensitive behavior in terms of their availability and the quality of their responses to the child's needs (Gálvez & Farkas, 2017). Considering 20.7% of the population in Chile in 2017 lived in multidimensional poverty (Ministerio de Desarrollo Social, 2018), it is relevant to analyze the relationship between maternal sensitivity and the socioemotional development of their children at an early age due to its implications for the development of public policies.

Unlike the contextual aspects described above, whether aspects related to pregnancy and childbirth could affect maternal sensitivity and therefore the socioemotional development of children have been addressed in few studies (studies of pre- and postpartum depression are an exception; see, for example, Field, 2010; Kemppinen, Kumpulainen, Moilanen, & Ebeling, 2006). The few studies available on this topic have observed that mothers who did not experience health problems during their pregnancies, those whose pregnancies were of longer duration, those who had vaginal deliveries and those whose children had a greater weight or gestational age at birth later manifested greater maternal

sensitivity toward their children (Bernier, Jarry-Boileau, Tarabulsky, & Miljkovitch, 2010; Shin, Park, & Kim, 2006). Among these variables, the mode of delivery is notable due to the alarming increase in the rate of caesarean sections in recent years in Chile. Therefore, it was determined that it was also relevant to investigate whether the mode of delivery had an impact on child socioemotional development.

Mode of Delivery, Maternal Sensitivity, and Child Socioemotional Development

In recent decades, the rapid increase in the rate of delivery by caesarean section has become a pressing concern worldwide (Lee & Kirkham, 2008). The cesarean section rate has reached 76% in the private health care system in Chile and 37% in the public system in 2010, progressing to 40.5% in the public system in 2013 (Ministry of Health, 2015); this increase has been accompanied by a consequent decrease in births by vaginal delivery (Salinas, Naranjo, Pastén, & Retamales, 2007). Worldwide, it has been observed that 15% of deliveries worldwide are cesarean (Betrán et al., 2007), and the WHO recommends that the cesarean rate should not exceed 10-15% (WHO, 1985 cited by Salinas et al., 2007). These results place Chile among the countries with the highest number of caesareans worldwide.

Childbirth is often a life event in which feelings of fear predominate, given that historically, the moment of birth has been characterized "as a dangerous and risky event" (i Font, 2015). At the same time, it has been found that women's experience and expectations of delivery have a strong impact on them, and there are differences between those who experience vaginal deliveries and those who have scheduled and unplanned caesarean. For example, women who have an unscheduled caesarean section have significantly higher anxiety than those who undergo a vaginal delivery (Ryding et al., 1998), and they perceive a negative impact on their maternal skills and their initial bonding with their children (Van Reenen & Van Rensburg, 2013). At the same time, greater anxiety during pregnancy has been shown to negatively affect gestational health, increase obstetric risk, and hinder normal adaptation to motherhood (Osório, González, & Trujillo, 2018).

The different modes of deliveries affect mothers' perceptions regarding the newborn and their own parental behaviors (Lobel & DeLuca, 2007). Women who deliver by caesarean present a more depressive mood, view their children in a less favorable way and provide less stimulation, care and play in the first five months postpartum than women who deliver vaginally (Lobel & DeLuca, 2007). Studies show a higher rate of postpartum depression in women who delivered by Caesarean than in those who had a vaginal delivery (Xie

et al., 2011), and across cultures, delivery by Caesarean has been associated with greater postnatal depression (see, for example, Goker et al., 2012; Sword, 2011). Along the same lines, Uriarte (2006) identified cesarean delivery as a risk factor for postpartum depression, a condition that in turn can permanently affect the development of attachment bonds given that the mother may view her ability to bond emotionally with the newborn as impaired. Similarly, a significant association has been found between vaginal delivery and a better quality of mother-child attachment (Lecannelier, Kimelman, González, Nuñez, & Hoffmann, 2008), which can in turn promote better socioemotional development in the child.

Considering the different repercussions of each mode of delivery (Lobel & DeLuca, 2007; Peters et al., 2018; Ryding, Wijma, & Wijma, 1998) and the implications of caesarean delivery for the health of both the mother and the child (increased problems related to lung function, metabolic and blood pressure disorders, among other issues) (Peters et al., 2018), studies that incorporate this variable and its possible effects on child development are therefore necessary. It is noteworthy that there is no literature that explains the relationship between mode of delivery and the socioemotional development of the infant, but some studies do show a relationship between the mode of delivery and maternal sensitivity. Thus, mothers who delivered via cesarean section were less sensitive to their babies than those who delivered vaginally (Bernier et al., 2010; Swain et al., 2008). This effect was especially marked in the case of unscheduled Caesareans, which had a greater negative impact on mother-child bond (Van Reenen & Van Rensburg, 2013). Such conditions could indirectly impact the socioemotional development of children.

The Present Study

Considering this background, this study aimed to analyze the influence of the mode of delivery and maternal sensitivity on the socioemotional development of infants. Early socioemotional development contributes to academic skills and adequate adjustment and reduces the risk of problems and school violence, among other issues (Berger et al., 2009; Domitrovich et al., 2017); consequently, the study of predictors of socioemotional development in early childhood provides information on important aspects of early intervention and informs the development of public policy. We expected to observe differences in the socioemotional development of children at one year of age according to their mode of delivery, namely, infants born by Caesarean would have lower levels of socioemotional development than children born vaginally. This would be especially

true in the case of unscheduled caesareans, which existing evidence has shown can negatively affect mothers' care for the child during the postpartum period (Lobel & DeLuca, 2007). In addition, we expected to find that children whose mothers showed greater sensitivity had better socioemotional development.

The relevance of this study lies in the impact that it would have on the ability to identify whether mode of delivery and maternal sensitivity predict greater socioemotional development in 12-month-old children, especially in the case of the mode of delivery, a factor that is little studied in relation to child socioemotional development. The identification of a relationship between the studied variables could influence public health policies in addition to encouraging the creation of programs focused on promoting socioemotional development during the first year of life by informing mothers and helping them develop their sensitivity. Various studies have demonstrated the effectiveness of such programs for positively intervening with maternal sensitivity (see, for example, the meta-analysis by Bakermans-Kranenburg, Van Ijzendoorn, & Juffer, 2003). The study is novel since it addresses a topic that has not been previously studied in the country and provides a critical perspective on the relationship between mode of delivery, maternal sensitivity and socioemotional development in children at 12 months of age.

Method

Design

The present study uses a descriptive, comparative, correlational and cross-sectional design with a quantitative methodology. The socioemotional development of the children in the study at one year of age is described; the socioemotional development of the children is compared according to the mode of delivery; and maternal sensitivity is correlated with the socioemotional development of the children. Finally, the mediation effect of the sensitivity variable on the relationship between the mode of delivery and the socioemotional development of children is analyzed.

Participants

The purposive non-probabilistic sample consisted of 91 maternal dyads, which were selected from a larger base that is part of project FONDECYT No. 1160110, entitled "Mentalization of parents and teachers, and their relationship with socioemotional and linguistic competences of children aged 12 and 30 months who attend nursery",

in which this study was embedded. The mean age of the mothers was 27.78 years ($SD = 6.7$), while the ages of the children ranged from 10 to 15 months, with an average of 12 months ($SD = 1.37$). Of the children, 44.0% were female, and 56.0% were male. All children attended one of 27 state and private day care centers in 18 communes in the city of Santiago, Chile. A total of 52.74% of the participants had a low SES, 24.17% had a medium SES, and 23.07% had a high SES. Regarding the mothers' educational level, 1.8% had incomplete basic education, 2.7% had complete basic education, 11.8% had incomplete secondary education, and 27.3% had complete secondary education. A total of 12.7% had incomplete technical or university training, 19.1% had complete technical or university training, and 7.3% had postgraduate training.

The inclusion requirements for this study were that the mothers who had infants in the age range from 10 to 15 months, the mothers lived with their child and the children attended nursery or daycare. Cases in which the child or their mother had some serious psychopathology were excluded from this study.

Instruments

Sociodemographic questionnaire. The sociodemographic questionnaire was developed by the main team of the study into which this study was embedded. The instrument was designed to characterize the sample and is answered by the mother of the child. It includes sociodemographic characteristics of the child (for example, age and sex) and his or her parents, including the mother's educational level and the SES of the family. In addition, inquiries about the mode of delivery (vaginal, cesarean, or unplanned cesarean).

Adult Sensitivity Scale (ESA, for its initials in Spanish). The Adult Sensitivity Scale (ESA) (Santelices et al., 2012) evaluates the sensitivity exhibited by significant adults in their play interactions with children aged 6 to 36 months during 5 minutes of free play. The interaction is videotaped and then observed and encoded by a team of previously trained coders. The ESA comprises 19 items scored between 1 and 3 points, with higher scores indicating greater sensitivity. The items are organized into 3 subscales: responsiveness, playful encouragement and warm attunement. The scores are averaged to obtain a score from 1 to 3 for each subscale and for the total scale. The scale also yields sensitivity categories: low, adequate and high (Santelices et al., 2012). The instrument presents adequate reliability measured through the Cronbach's alpha coefficient ($\alpha = .93$) and a considerable interrater consistency of .62 (Cohen's kappa) in a sample with characteristics similar to those of

the sample in the present study (Santelices et al., 2012). For the sample in this study, the reliability was $\alpha = .87$.

Functional Emotional Assessment Scale (FEAS) (Greenspan et al., 2001). This instrument evaluates emotional functioning in children from 5 months to 4 years through observations of their behavior. It consists of a videotaped free play period lasting 15 to 20 minutes observed by the researcher, who subsequently encodes the behaviors of the caregiver and of the child. For this study, the scale was applied to 5-minute free-play interactions between the mother and child, and only those items corresponding to the child were encoded. The instrument has several application forms based on the age of the child. The forms for children aged 10-12 months and for 13-18 months were used for this study, and 3 dimensions of emotional development were considered: regulation and interest in the world (9 items), forming relationships, attachment and engagement (5 items) and two-way purposeful communication (4 items). Each item is scored between 0 and 2 points, and a higher score indicates better performance. The reliability of the scale for evaluating the behaviors of the child ranges from $\alpha = .91$ to $\alpha = .97$, and the interrater agreement ranged between .91 and .98 (measured with Cronbach's alpha) in a sample of North American children (Greenspan et al., 2001). This instrument has been adapted to the Chile context and presents adequate reliability, with Cronbach's alphas of .85 for the 10- to 12-month form and .83 for the 13- to 18-month form (Gómez, 2019). For the sample in this study, the reliability was $\alpha = .80$, with considerable interrater agreement in the range of .68 to .72 (Cohen's kappa).

Procedure

The present study consists of an analysis of secondary data from a longitudinal study that aimed to analyze the influence of parenting skills and parent characteristics on child development between 12 and 30 months of age. To obtain the data, contact was established with day care centers to obtain authorization to administer the study. Subsequently, the mothers of the children were contacted, and those who were willing to participate were asked to sign an informed consent letter. Next, they were asked to answer the sociodemographic questionnaire, and they were invited to play with their children using a standard set of toys in a room in the nursery equipped for this purpose. The first 2 minutes of play were not recorded to allow the participants to become familiar with the evaluation. Then, 5 minutes of free play were recorded. This recording was used to encode the mother's sensitivity and the child's socioemotional development.

Ethical Considerations

The longitudinal study from which the data were obtained was reviewed and approved by the Scientific Ethics Committee of Social Sciences, Arts and Humanities of the Pontificia Universidad Católica de Chile (ID 150707003) and was carried out according to the ethical standards of the Declaration of Helsinki of 1964 and its subsequent amendments. The mothers of the children signed an informed consent letter at the beginning of the study, and the cases were identified with a folio number to safeguard the confidentiality of information.

Data Analysis

The data were analyzed with the R Studio program. First, descriptive statistical analyses of the study variables were used, and the mode of delivery (vaginal delivery, scheduled cesarean section, unscheduled cesarean section categories), maternal sensitivity (low, adequate, and high maternal sensitivity categories and scores for total sensitivity and the responsiveness, playful encouragement and warm attunement subscales) and socioemotional development (scores for total scale and the dimensions of regulation, attachment and communication) were considered. Subsequently, we verified the assumptions of normality (Kolmogorov-Smirnov test) and homoscedasticity of the data (Levene's test). Then, differences in the children's socioemotional development were analyzed according to mode of delivery, first with ANOVA and then with ANCOVA, controlling for the educational level of the mother (because it was correlated with maternal sensitivity, $r = .46, p < .001$, and with socioemotional development, $r = .30, p = .004$). Subsequently, the relationship between maternal sensitivity

and child socioemotional development was addressed through Pearson's linear correlations and then with partial correlations, again controlling for the mother's educational level. Finally, a hierarchical regression was performed with the study variables to determine an explanatory model of child socioemotional development at one year of age.

Results

Descriptive Analysis of the Study Variables

Regarding the maternal variables, 59.3% of the mothers delivered vaginally, while 40.7% delivered via cesarean section (24.2% scheduled, 16.5% unscheduled). Regarding maternal sensitivity, 23.1% of the mothers were in the low sensitivity category, 59.3% presented adequate sensitivity, and the remaining 17.6% were in the high sensitivity category. The mean of the total scale score was 2.08 ($SD = 0.39$, range 1.37 - 2.79). The descriptive details for the specific scales can be found in Table 1.

Regarding child socioemotional development, the mean of the total score was 26.28 ($SD = 4.56$, range 10.6 - 32.0) (See Table 1). Despite not having national norms for the interpretation of the scores, it is worth mentioning that 17.6% of the children had scores -1 SD from the group mean.

Comparative Analysis of Child Social Emotional Development According to Mode of Delivery

The results of the Kolmogorov-Smirnov test showed no significant differences ($p > .05$), indicating a normal distribution of the socioemotional development of children in the

Table 1

Descriptive statistics for the maternal sensitivity and child socioemotional development scale scores

	Min	Max	Mean	SD
<i>Maternal sensitivity</i>				
Responsiveness	1.00	3.00	1.93	0.54
Playful encouragement	1.00	3.00	2.13	0.57
Warm attunement	1.43	3.00	2.22	0.42
Total sensitivity score	1.37	2.79	2.08	0.39
<i>Socioemotional development</i>				
Regulation dimension	5.6	14.0	12.22	1.86
Relationships dimension	2.0	10.0	7.98	1.93
Communication dimension	3.0	8.0	6.09	1.49
Total socioemotional score	10.6	32.0	26.28	4.56

N = 91

three mode of delivery groups. The results of the Levene test were also not significant ($p > .05$), showing equality of variance in the studied groups. No differences were observed in the socioemotional development of the children according to mode of delivery, either in the initial analyses ($F_{(2,88)} = 0.32, p = .728$) or when controlling for maternal educational level ($F_{(2,87)} = 0.43, p = .655$). Nonetheless, a non-significant trend was observed in which socioemotional development scores decreased according to the mode of delivery, with children who were born vaginally tending to obtain higher scores than those born via unscheduled caesarean (see Figure 1).

Relationship between Maternal Sensitivity and Child Social Emotional Development

The analyses showed a significant correlation between the total child socioemotional development score and maternal sensitivity total score ($r = .43, p < .001$) and the scores on the responsiveness ($r = .28, p = .008$) and warm attunement ($r = .48, p < .001$) subscales, indicating that the more sensitive the mother is, the greater the socioemotional development of her child. The same results were observed for each of the dimensions of socioemotional development, as shown in Table 2. The playful encouragement subscale of sensitivity is the only one that did not correlate with child socioemotional development.

When the analyses were repeated while controlling for maternal educational level, significant correlations with

the total sensitivity scale were maintained, with moderate correlations for the total socioemotional development scale ($r = .33, p < .001$) and the dimension of regulation ($r = .30, p = .004$) and weak correlations for the dimensions of relationships ($r = .28, p = .007$) and communication ($r = .27, p = .011$). In addition, significant correlations were observed between the sensitivity warm attunement scale, which had moderate correlations with the total scale of socioemotional development ($r = .40, p < .001$) and the dimensions of regulation ($r = .39, p < .001$), relationships ($r = .30, p = .004$), and communication ($r = .33, p = .002$).

Explanatory Model of Child Social-Emotional Development at One Year of Age

To obtain an explanatory model of socioemotional development at this age (taking into account the total score for this variable), a hierarchical regression was carried out. For this, the correlations between child socioemotional development and the sex and age of the child and age and education of the mother were first analyzed to determine which variables to include in the model. Of these analyses, only the age of the child ($r = -.27, p = .011$) and the educational level of the mother ($r = .30, p = .004$) were found to be significant and were used in the analysis. For the same reason, the total sensitivity score of the mothers was considered, but the mode of delivery was not because previous analyses showed that it had no relationship with the variable under study. Thus, in the analysis, child age

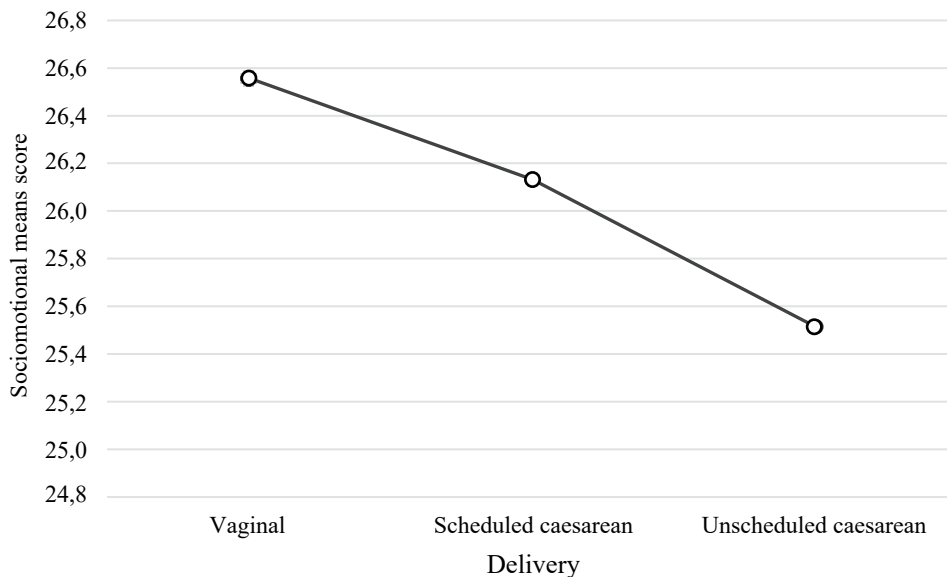


Figure 1
Socioemotional development scores by mode of delivery

Table 2
Correlations between maternal sensitivity and child socioemotional development

Sensitivity		Total score	Socioemotional scale		
			Regulation	Relationships	Communication
Total score	Corr	.43	.34	.40	.35
	Sig	.000	.001	.000	.001
Responsiveness	Corr	.28	.20	.29	.23
	Sig	.008	.063	.006	.029
Playful Encouragement	Corr	.20	.15	.19	.17
	Sig	.060	.147	.074	.106
Warm attunement	Corr	.48	.41	.42	.41
	Sig	.000	.000	.000	.000

N = 91

(model 1) and maternal educational level (model 2) were introduced as control variables, followed by the total maternal sensitivity score (model 3) (see Table 3).

In model 1, child age was significant ($\beta = -.27$, $t = -2.59$, $p = .011$); at older ages, socioemotional development scores were lower, explaining 7.0% in the variance in the construct. This variable remained significant until the final model. The educational level of the mother also proved to be a significant predictor of socioemotional development ($\beta = .34$, $t = 3.46$, $p < .001$) when the child's age remained fixed (model 2). Thus, a higher maternal educational level was related to a higher child socioemotional development score, contributing an additional 11.1% to the explanation of the variance of the construct. However, in the final model, this variable ceased to be significant.

Finally, total maternal sensitivity was also a significant predictor ($\beta = .37$, $t = 3.46$, $p < .001$) when it was introduced in model 3 and child age and maternal education were controlled. This indicates that, consistent with expectations, higher maternal sensitivity was related to a higher child socioemotional development scores. Maternal sensitivity contributed an additional 10.0% to the explanation of the

variance in the construct and was the most significant predictor in the final model, followed by the age of the child. The final model (model 3) was found to be significant ($F_{(3, 87)} = 11.31$, $p < .001$), accounting for 28.0% of the total variance in socioemotional development.

Regression analyses were then repeated with the different sensitivity scales to determine which one was the most significant predictor of child socioemotional development. The warm attunement scale was the most significant predictor ($\beta = .42$, $t = 3.92$, $p < .001$) (see model 3b), accounting for 12.3% of the variance when child age and maternal education were controlled. This model was also found to be significant ($F_{(3, 87)} = 12.69$, $p < .001$), accounting for 30.4% of the total variance of the construct.

Discussion

Consistent with the hypothesis, the results of the study support a relationship between greater maternal sensitivity and better socioemotional development of children at one year of age; sensitivity (especially the warm attunement

Table 3
Predictive model of child socioemotional development

Variables	Model 1			Model 2			Model 3			Model 3b		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Constant	36.90	4.12		33.69	4.00		27.57	4.17		25.65	4.24	
Children age	-0.89	0.34	-.27**	-1.03	0.33	-.31**	-1.03	0.31	-.31**	-0.93	0.30	-.28**
Mother education				1.09	0.32	.34**	0.44	0.35	.14	0.36	0.35	.11
Sensitivity							4.36	1.26	.37**			
Warm attun. scale										4.55	1.16	.42**
r ²	.070**			.182**			.280**			.304**		
F	6.73			9.76			11.31			12.69		

** $p < .01$

dimension of this construct) was the most important predictor of socioemotional development among all the studied variables. This result is consistent with the findings of other studies that have demonstrated the relevance of maternal sensitivity to general child development in terms of cognitive, emotional, psychomotor, social and linguistic aspects (Simó & D'Ocon, 2014). Although the relationship between maternal sensitivity and child socioemotional development has already been documented in other countries (Chen, 2012; Page, Wilhelm, Gamble, & Card, 2010), it has not previously been studied in a Chilean sample or with children of this age. Thus, this research provides national evidence of the role of maternal sensitivity in child socioemotional development.

Considering that almost 18% of children showed below-average socioemotional development for their age group and that 23% of the mothers had low sensitivity, it is very important to be able to promote adequate sensitivity early on in mothers, which in turn will benefit their children's socioemotional development. Although this study had a small sample that was not representative of all Chilean children, and then the results should be taken with caution, it can nonetheless be suggested for example to include in well-child doctor visits during the first year of life the detection and promotion of appropriate mothering skills, which in turn will contribute in part to optimal socioemotional development in children.

Regarding the comparison of the children's socioemotional development according to the mode of delivery, no significant differences were observed. However, there was a non-significant tendency for total socioemotional development scores to decrease in cases of cesarean delivery. Considering that in almost 41% of cases, delivery was by caesarean section (scheduled or unscheduled), a rate well above the 10-15% recommended by the WHO (WHO, 1985 cited by Salinas et al., 2007), it is imperative to perform new studies examining the possible impact of the mode of delivery on the socioemotional development of children in a larger sample and with children in other age ranges.

Previous studies have confirmed the influence of the mode of delivery on mothers' behavior towards their babies, such as presentations of depressive mood and anxiety (Lobel & DeLuca, 2007; Ryding et al., 1998; Uriarte, 2006). Such behaviors negatively impact the mother-child bond (Van Reenen & Van Rensburg, 2013), which could affect the socioemotional development of the child. Thus, some studies have shown greater socioemotional and behavioral problems in children whose mothers had depressive or anxious symptoms before or after delivery (Madigan et al., 2018; Raskin, Easterbrooks, Lamoreau, Kotake, &

Goldberg, 2016). In addition, it has been found that high levels of maternal anxiety in the early stages of pregnancy predicted greater negativity and rejection later as well as worse regulation strategies in children before one year of age, which in turn was moderated by maternal sensitivity (Thomas et al., 2017). Thus, future studies should consider maternal mental health during pregnancy or after birth and its relationship with the socioemotional development of the child.

It should also be considered that these studies have been carried out during the first months of the child's life, so there is a lack of studies that address whether the repercussions of childbirth would be limited to the short-term or would have a long-term effect. As this is a study with a very limited sample, the lack of significant results does not allow answering the question, and new studies are necessary. In addition, it should be noted that because all children attend a daycare, this could be a support factor external to the home, thereby homogenizing the level of socioemotional development of children. Therefore, future studies should include children who do not attend daycare, since only 29.1% of children between 0 and 3 years of age attend daycare in Chile (Ministerio de Desarrollo Social, 2018).

At the same time, some factors have been described that would affect how each mother experiences her mode of delivery, such as previous beliefs and expectations, and the perceived support needed and received by her partners or by the midwives who accompany them during the process (Ip, Chien, & Chan, 2003). Future studies could include the interaction of mode of delivery with other elements that consider how this was experienced, where, for example, a birthing experience as a traumatic experience and of little support could have a greater impact on the bond with the child.

It is important to consider the limitations of this study. One limitation of this research is the quality of the sample, which is nonprobabilistic and small (91 dyads). Likewise, all children in the sample attended a public or private daycare, so the results cannot be generalized to all children aged 12 months. Another aspect to consider is that the evaluation of children's socioemotional development was based on the observation of 5-minute videos of interactions, so the question remains whether longer observations would generate different results. Thus, these findings should be taken with caution and explored in greater depth in future studies. Additionally, as this is a cross-sectional study, it only accounts for these variables in children at one year of age, so it is important to investigate the relationships among these variables in children at other ages and/or with a long-term follow-up in future studies.

In addition to a larger and more representative sample and the inclusion of children of different ages, future studies in Chile could investigate whether the mode of delivery has repercussions for other aspects of child development, for example, cognitive or linguistic development. Additionally, other factors that could be examined to determine their effect on child socioemotional development include those related to the psychological well-being of the mother. For example, postpartum depression affects 1 in 8 women and has been associated with negative effects not only for the mother but also for the physical, cognitive and emotional development of the child (Patel et al., 2012). In addition, future studies could consider whether maternal sensitivity is conditional on the age of the child (as this study showed in relation to socioemotional development), controlling for the mode of delivery. This would allow an analysis of whether maternal sensitivity changes as the child grows and whether this trajectory of change is different for children born via caesarean or vaginal births. Such studies might also consider whether the effects of the mode of delivery associated with the maternal sensitivity are present only in the first months of the child's life and then disappear.

Despite these limitations, this study provides evidence on the relevance of promoting maternal sensitivity during the first year of the infant's life, an aspect that should be considered in the design of early childhood support plans. Early detection, promotion and prevention will allow early support for the socioemotional development of infants, better preparing them for future challenges.

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