Childcare in Chile. The role of ethnicity and socioeconomic inequalities

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Contents

Preface

In the last decade Chile has embarked on a road that must lead to the reduction of inequality gaps and higher welfare for the population. Special attention is paid to the issue of equal opportunities in early childhood and onwards. Particularly important is the national program Chile Grows With You, a policy begun in 2007 to cover the health insurance from birth until the age of four of the most vulnerable population. This program is meant to be one of the cornerstones towards progress in equal opportunities and child protection from a multidimensional perspective. Both physical, socio-emotional, and cognitive aspects of development are addressed. But how did childcare and how did the public policies for children change in the history of Chile? This is a preliminary question that will be addressed in the first chapter reviewing the milestones that preceded the current positive level in Chilean children's physical and mental health.

This public policy has also focused on an unprecedented increase in the breadth of coverage of non-maternal care through daycare centers, to promote women's employment, on the one hand, and meet the conditions of development of children from vulnerable families, on the other. However, it is known from the international literature, that the quality of this care may influence the developmental outcomes of children. Therefore, we wonder whether this rapid increase in daycare centers for infants in Chile has led to a decrease in their quality. What is the current quality of daycare in Chile? And how close or far is this from the quality of center daycare in other countries? These questions are addressed in the second chapter, where we measure quality of care in a sample of daycare centers and compare the result with those of other studies conducted in Chile prior to this explosive growth and with results of international studies.

Unlike many of the interventions in the past, which were more focused on nutritional aspects and aimed to reduce infant mortality, the program Chile Grows With You seeks to address the needs relating to children's wellbeing and psychosocial skills. One of its internationally unprecedented features is the nation-wide use of a measure for assessing the mother-child relationship to discover early difficulties in emotional development. However, this instrument was never validated and its reliability and validity were unclear. Therefore, and because of the huge number of families that have been evaluated using this instrument – to date, more than 200,000 cases – (Causadias, Sroufe, & Herreros, 2011), we conducted a validation study of the Massie-Campbell Attachment During Stress (ADS) scale, the results of which were compared with those of the Ainsworth's Strange Situation Procedure, the gold standard to assess attachment. The results are provided in Chapter 3.

Moreover, since the program Chile Grows With You aims to support and evaluate child development in connection with parenting, various strategies have taken into account the cultural diversity of the country. Diversity is mainly represented by the Mapuche population, which reaches about 5% of the population and whose parenting may be affected by parenting guides written from the viewpoint of the majority culture. In the attempt to respect cultural diversity, the Chile Grows With You program provided a series of guides about pregnancy, childbirth and parenting to families from ethnic minorities, in which the parenting practices reflect their own culture and which they can read as an alternative to or in tandem with the guide for majority families. However, very little is known about cultural differences in parenting among the various ethnic groups and, above all, there are no empirical studies that investigate this matter. Thus Chapter 4 describes a first empirical study to answer questions such as 'What are the differences in parenting between Mapuche families and non-Mapuche families', and 'What is the role of socio-economic inequality?'

Finally, Chapter 5 is focused on the issue of how type of care (maternal versus daycare) and ethnic differences may affect mother-child-attachment, maternal sensitivity, or the quantity and quality of home care children receive. Through a longitudinal study, the Magellan Leiden Childcare Study (MLCS), and using the opportunity to cross-validate some of its results in a representative sample of the Chilean population (ELPI), we tried to address the question as to how daycare attendance from early age can affect attachment relationships and the quality of the home environment.

1 Introduction. A historical review of childcare in Chile

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Abstract

This article discusses significant changes in childcare policy and practice in Chile. We distinguish four specific periods of childcare history: child abandonment and the creation of foundling homes in the 19th century; efforts to reduce infant mortality and the creation of the health care system in the first half of the 20th century; an increasing focus on inequality and poverty and the consequences for child development in the second half of the 20th century; and, finally, the current focus on children's social and emotional development. It is concluded that, although Chile has achieved infant mortality and malnutrition rates comparable to those of developed countries, the country bears the mark of a history of inequality and is still unable to fully guarantee the health of children from the poorest sectors of society. Recent initiatives seek to improve this situation and put a strong emphasis on the psychosocial condition of children and their families.

Keywords: Childcare, Child Welfare.

Introduction

Chile has achieved an infant mortality rate similar to that of developed countries. This favorable situation reflects the culmination of several changes made to childcare policy and practice based on the findings of scientific studies. The focus of childcare has shifted from prevention of infant mortality and morbidity toward the promotion of children's psychoemotional development. This review presents a concise, yet comprehensive account of childcare history in Chile that serves as a point of reference for specialists in social medicine, psychologists, and policy makers in Chile and other countries. Unlike previous studies (Rojas, 2010; Milanich, 2009) it covers a period of two hundred years and specifically concerns relevant scientific research. We discuss four critical periods of childcare history against the background of more general changes in health care focusing

on the following main aspects: key policies; changes in childcare practice; and scientific research. The first period begins with the establishment of the Republic of Chile when child abandonment was very common and foundling homes first emerged. Later, in the first half of the twentieth century, the country began to implement health care policies aimed at reducing child mortality. During the third period, between the 1960s and 1990s, the first scientific publications on childcare began to emerge, inequality and poverty were identified as factors that cause malnutrition and stunted growth in children and the government laid the foundations of a more universal childcare system. The last period corresponds to the last decade, when childcare began to focus on improving children's social and emotional well-being. This period is characterized by a sharp increase in the number of research studies related to childcare.

Method

A search of articles resulting from relevant research studies conducted in Chile in the thematic areas of medicine, pediatrics, psychology, education, and health care was carried out using the Web of Science citation index. Abstracts, titles and keywords were searched using the tags "or" operators and the terms "child*", "infan*", "baby*", "babie*", "toddle*" and "Chile". The search yielded a sample of 1,849 papers which was reduced to 61 after applying the following exclusion criteria: (a) the focus of the study was not childcare; (b) the investigated variable was a specific disease; (c) the sample only included children aged over five years. Six of the excluded papers were considered particularly relevant and were added to the sample using the snowball method.

Childcare in the nineteenth century: foundling homes

Although reliable data on the early history of childcare in Chile is scarce, it is widely accepted that extreme poverty, social customs and cultural beliefs and practices, inadequate contraception, and religious traditions led to a number of unwanted children (Meza, 1991; Milanich, 2004). Previous to the emergence of foundling homes in the eighteenth century, unwanted infants were smothered, exposed to the elements, or left on the doorsteps of rich people's homes (Cunningham, 1995; Stearns, 2011). The first foundling home, called La Casa de Huérfanos (the Orphans' House), was founded in Santiago de Chile in 1758 (Meza, 1991; Milanich, 2004). Its name hid the harsh fact that most of its inhabitants had been abandoned by their parents. In 1853, the French-Canadian congregation the Sisters of Providence began to run "La Casa" (Meza, 1991; Milanich, 2004). The doctrine of the Catholic Church at the time strongly prohibited the use of contraception, abortion, and childbirth out of wedlock. Unmarried pregnant women were stigmatized and women who gave birth to an illegitimate child were pressured to abandon the infant. This and other factors, such as extreme poverty, led many unmarried mothers to leave their baby in the orphanage and 80% of the infants that passed through La Casa were illegitimate (Meza, 1991). By 1912, Chile already had some 25 orphanages and La Casa was considered the largest and most important institution for abandoned children in the country

(Milanich, 2004). Meza (1991) estimated that more than 100,000 children were left in Chilean orphanages between 1770 and 1929.

Milanich (2004), using historical letters and files, reconstructed children's arrival and "passage" through La Casa and found that a remarkably high proportion were abandoned. The same author (Milanich, 2004) hypothesized that parents became more attached to their children after they had survived their first year of life. One possible reason for this is that very young children were seen as a greater economic burden to the family, compared to five or six-year-olds for example who could do simple manual tasks.

As in other countries, orphanages were not so much institutions where children grew up, but, more importantly, administrative bodies that played an important role in the redistribution of children (Fuchs, 1984; Ransel, 1988; Sherwood, 1988). Orphanages provided the children with a semiofficial certificate stating that the child had been abandoned and allowing for their legal adoption. Many children stayed in La Casa only as long as it was necessary to arrange a legal adoption, which in some cases could be just a few days, or even hours (Milanich, 2004). Adoptive parents often requested a child when they needed a servant, maid or apprentice, or when they wished to have a child of their own as an heir or to care for them in their old age. The redistribution of infants and older children as unpaid servants in rich Catholic families was sanctioned and organized by the Catholic Church and was viewed as an act of charity and thus highly respected.

The redistribution of children was not without risk however. Infant mortality was very high in Chilean society as a whole and even higher in orphanages. The vulnerability of infants and costs of bringing up a child led many poor families to leave children at an orphanage with the hope that the child would survive, but also to avoid possible future funeral and burial costs (Meza, 1991). Orphanages tried to contract wet nurses to keep the infants alive but, based on La Casa files, it is estimated that some 80% of abandoned infants did not survive (Milanich, 2004). Other studies found similar alarming death rates in orphanages in other countries during the same period (Ariès, 1996; Fuchs, 1984; Hrdy, 1999; Ransel, 1988; Sherwood, 1988, Wickes, 1953). Against this social backdrop, the first quarter of the twentieth century saw a number of changes in Chilean society that led to an eventual reduction in the role of orphanages (Milanich, 2004).

Childcare in the first half of the twentieth century: well-baby clinics

In the beginning of the 20th century, Chile's government initiated social healthcare reforms to obtain what is called stage A in healthcare in an attempt to reduce infant mortality and increase life expectancy (Kaempffer & Medina, 1982). A number of programs aimed at reducing malnutrition and mortality were introduced, such as the Gotas de Leche (drops of milk) program, which was implemented in 1901. This program was inspired by the Goutte de Lait program introduced by the Frenchman Budin in the consultation de nourrissons (well-baby clinic) that he founded in Paris in 1892. Well-baby clinics provided mothers with free sterilized cow milk, childcare advice and child health checks. Chile was one of the first countries in the world to replicate Budin's program (Dyhouse, 1978; Rosselot, 1982; Wickes, 1953, Schonhaut, 2010). At the same time, the government of the

then president Barros Luco (1910-1915), believing that existing programs were not enough to overcome the alarming infant mortality rates, organized the First National Conference on Child Protection, from which the idea to promote other measures such as maternity homes emerged (Schonhaut, 2010).

During this period, improvements were made to the general health system, such as the introduction of social insurance for workers in 1918. Although the majority of insurance funds offered only limited coverage for the treatment of specific diseases, exceptional cases, such as the Compulsory Workers Insurance Fund (Fondo de Seguro Obligatorio para Trabajadores), provided both curative and preventive healthcare specifically for mothers and infants (Hall & Diaz, 1971). Despite these improvements, the health system was severely criticized for its discriminatory nature by the then young Member of Parliament Salvador Allende. In 1938, the Preventive Medicine Act was passed which provided annual medical examinations for the early detection of several diseases in adults. During this period, the participation of local welfare boards (Juntas de Beneficiencia), supported by private contributions and the Church, also contributed to the development of the health system (Hall & Diaz, 1971). Different initiatives during the next decades contributed toward the development of a unified health system whose advantages were seen during the earthquake of 1938. However, it was not until 1952 that a new health system was created. The National Health System (Sistema Nacional de Salud, SNS) adopted the model of the British National Health Service founded in 1948, merging the functions of various public and private health systems. This system considerably broadened health coverage across society and succeeded in providing preventive and curative care to workers' spouses and their children, including those over the age of two years who were previously excluded from coverage (Hall & Diaz, 1971).

The goal of the SNS was to provide free health care, including maternity care and delivery, to all citizens. However, in practice, a private health system, primarily for white collar workers and other groups, such as the military, remained in existence, thus creating a hybrid system with compulsory health insurance and free care for manual workers and private care for privileged groups. From its inception, the SNS struggled with financial problems, as funding proved insufficient to meet increasing demand. Over the years, many attempts have been made to create a universal system fully funded by the state that includes all sectors of society, but to no avail (see below).

During this period, the reduction of the infant mortality rate (IMR) remained a priority goal. Numerous studies have analyzed the factors contributing to the decline in Chile's IMR, which is currently the lowest in South America (Figure 1). Contrary to claims (Kaempffer, 1977; Szot, 2002; Viel, 1967), the introduction of the SNS did not immediately result in a spectacular reduction of IMR. In 1960, eight years after the implementation of the SNS, the national IMR remained around 132 deaths per 1,000 live births, compared to 136 deaths per 1,000 live births in 1950 (Jimenez & Romero, 2007; Kaempffer, 1977; Rosselot, 1982). In fact, IMR had already shown a slow but steady decline before the introduction of the SNS. According to data provided by the World Health Organization (WHO), Chile's IMR reached a low of 7,7 deaths per 1,000 live births in 2011, while the under-five

mortality rate was 8,7 deaths per 1,000 live births (WHO, 2011). Several authors have claimed that this steady decline cannot be explained by steady economic growth because Chile has experienced several financial crises since the 1950s (Monckeberg, Valiente, & Mardones, 1987). Important factors contributing to the decline of IMR were the provision of sewerage and fresh water supplies in cities and, more recently, rural areas (Monckeberg et al., 1987).

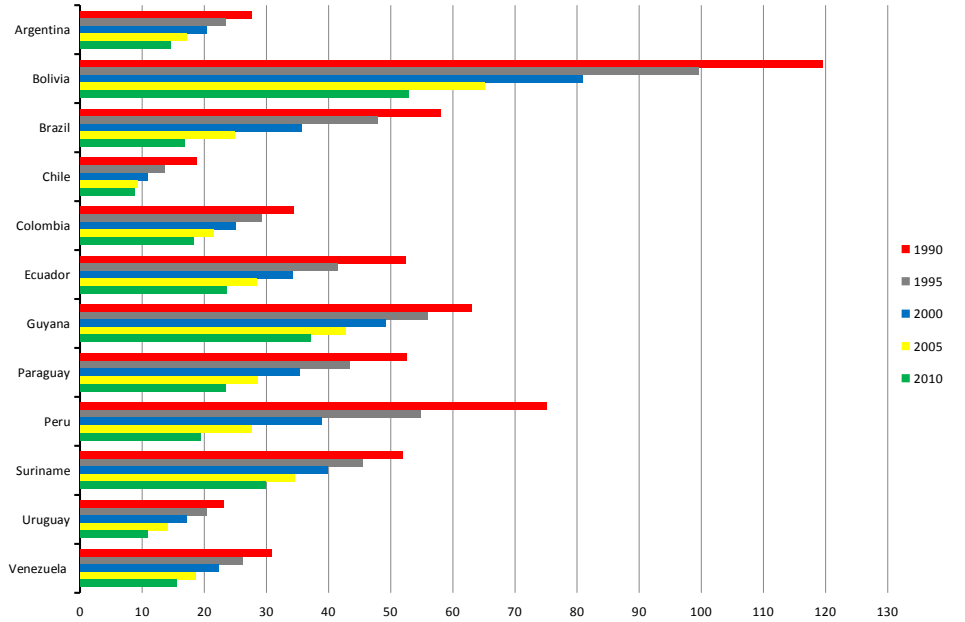

Figure 1. Child Mortality: Under-five (per 1000 live births): Both sexes in South America 1990 – 2010.

Childcare in the late twentieth century: the struggle for universal health care

This period was characterized by initiatives to provide more universal health care and greater equity in the health system. However, these initiatives suffered setbacks during the military regime due to attempts to commercialize the health system. At the same time, scientific research became more systematic (e.g., Riley, 1956) and oriented toward health outcomes, such as malnutrition and stunted growth.

The system was marked by unequal access since its inception in the early 1930s and Salvador Allende continued to oppose the system leading up to his rise to power. Allende was not alone in his opposition and efforts to create a more universal health system continued during the 1960s and 1970s. In 1968, for example, healthcare reforms proposed by Eduardo Frei Montalva's Christian Democratic government were met with strong resistance from medical doctors who feared a loss of income with the disappearance of the private healthcare system. Later, in the beginning of Allende's administration (1970 to 1973),

renewed efforts were made to reform the health system. However, once again the idea to create a state-funded unified health system where all citizens have equal access met with fierce opposition from the medical lobby and plans were eventually aborted due to an increasingly adverse political climate (Labra, 2002).

The most important change after the military coup d'état led by Pinochet in 1973 was the creation of the National System of Health Services (Sistema Nacional de Servicios de Salud, SNSS) replacing the SNS and creating 27 districts. Responsibility for primary care was delegated to municipalities creating a number of problems, such as loss of personnel status, disorganization of epidemiological files and longer waiting lists. Furthermore, the creation of Isapres (Instituciones de Salud Previsional) established an element of private health insurance in the system which, together with other gradual reforms, caused unequal access to health care (Labra, 2002). In the 1990s however health policies took a turn for the better for low income groups and primary health care was once again provided free of charge, and economically vulnerable women received greater financial support and free healthcare before and after delivery (Labra, 2002; Szot, 2002). This first period of the return to democracy was also characterized by a major increase in investment in public health and health spending rose to levels that were eight times higher than those in the 1980s. The percentage of the Gross National Income devoted to healthcare, which during the dictatorship had been reduced to 0.85%, rose to 6.5%; however the majority of this funding went to the private system (Labra, 2002).

Studies showed the significant progress in the fight against IMR and malnutrition, while increasingly accurate statistics revealed the persistent problem of social inequality. Various authors showed that IMR was a function of social class, geographical region, and per capita income (Donoso, 2004; Hertel-Fernández, Giusti, & Sotelo, 2007; Hollstein, Vega, & Carvajal, 1998; Labra, 2002; McCormick, Shapiro, & Horn, 1979), exposing the continuing role of socioeconomic conditions in public health in Chile. IMR was much higher in poor rural areas than in more affluent communities (Donoso, 2004; Hertel-Fernández et al., 2007; Labra, 2002; Medina & Kaempffer, 2007). Labra (2002) also argued that inequalities were accentuated by the neoliberal reforms that began in the mid- 1970s based on the view that poverty was the result of personal failure.

The consequences of socioeconomic inequality for childcare and child health were the subject of a number of studies (Alvarado et al., 1999; Alvarez, Wugaft, & Salazar, 1988; Amigo, Bustos, & Kaufman, 2010; Araya et al., 1996; P. Bustos, Amigo, Muñoz, & Martorell, 2001; P. Bustos, Muñoz, Vargas, & Amigo, 2009; Buvinic, Valenzuela, Molina, & González, 1992; Castillo, Cortes, & De Andraca, 1993; Colombo, de la Parra, & López, 1992; De Andraca, Castillo, & Cortes, 1996; Donoso, 2004; González et al., 2009; Hertel-Fernández et al., 2007; Ivanovic et al., 2004a, 2004b, 2008, 2009; McCormick et al., 1979; Prieto & Scott, 1986; Rodríguez, Lira, & Montenegro, 1975; Sanhueza, 2006; Valenzuela, 1997). McCormick et al. (1979) concluded that factors related to urbanization and literacy were associated with the decline in IMR. Herthel-Fernández et al. (2007) highlighted a strong association between child mortality and low levels of maternal education and paternal occupation. Donoso (2004) observed an association between child

mortality and family income, showing that IMR in wealthier parts of Santiago de Chile was similar to that of developed countries (5.6 per 1,000 live births), while rates in poorer neighborhoods were comparable to national levels between 1984 and 1990. In a study of adolescent mothers, Buvinic et al. (1992) found that marital status and professional occupation of mothers were strong predictors of financial income and capacity to care for children. The study showed that adolescent mothers that did not receive support from the father of their child were at greater risk and, as a consequence, often had to enter the labor market under unfavorable conditions, thus leading to what Buvinic et al. (1992) call the "reproduction of poverty".

Following healthcare developments, such as the sharp decrease in IMR, new investigations emerged in the 1990s focusing on child nutrition and stunted growth, particularly among the poor (Amigo, Bustos, Leone, & Radrigán, 2001; Castillo et al., 1993; Colombo et al., 1992; De Andraca et al., 1996; Ivanovic et al., 2000; Valenzuela, 1990, 1997). It was shown that malnutrition during the first year of life had a negative impact on cognitive level, IQ scores, and school results (Castillo et al., 1993; De Andraca et al., 1996; Ivanovic et al., 2000, 2008). In addition, Valenzuela (1990, 1997) found a significant association between malnutrition and low maternal sensitivity and a high risk of developing an anxious mother-child attachment in low-income families. Other results indicated that recovery from the cognitive and physical effects of malnutrition was better in children who grew up with their biological parents than in institutionalized children (Ivanovic et al., 2009; Colombo et al., 1992). In a study conducted to reveal the variables associated with stunted growth in school children, Amigo et al. (2001) showed that environmental factors, such as paternal alcoholism, lack of good health care, poor hygiene, malnutrition, and a short breastfeeding period, were factors contributing to stunted growth. This led to the introduction of programs to promote breastfeeding (Alvarado et al., 1999; Campos, Márquez, & Wilson, 2010; Uauy & De Andraca, 1995), which seem to have had positive effects, particularly in rural areas (Valdés et al., 1993). Adolescent mothers were found to be most likely to discontinue breastfeeding early (Barría, Santander, & Victoriano, 2008).

Another important aspect of the sociocultural development of children is ethnic background. For example, several studies have analyzed physical growth and mental development in Mapuche children, the largest ethnic group in Chile that represents 4.6% of the total population. Bustos et al. (2001, 2009) and Amigo et al. (2010) reported that stunted growth and low weight in Mapuche children were not so much the result of hereditary differences but of conditions of poverty, and under ideal circumstances there should be no difference between anthropometric measures of indigenous and non-indigenous children, which is consistent with the results of studies reported in the WHO Child Growth Standards (WHO, 2006).

Childcare in the last decade: quality of living conditions and social and emotional wellbeing

Child care policies in the last decade have been aimed at improving children's living conditions. Research has focused on evaluating the influence of the family and school environment on children's emotional development and attachment.

One of the most important developments was the introduction of the program Chile Grows with You (Chile Crece Contigo) in 2007. This program formed one of the key pillars of social protection policies introduced by the Bachelet administration (Saracostti, 2010). The program was inspired by similar programs in the United States and United Kingdom, such as Head Start, and aimed to cover the period from gestation to preschool. Presently, the program is mainly geared to the most vulnerable groups of society, in which primary caregivers are subject to a high risk of mental health problems (Bedregal et al., 2010).

The program focuses not only on nutrition and physical health but also involves other initiatives such as early stimulation programs, improvements in children's physical environment, parent education, guidelines for providing biopsychosocial support from pregnancy onwards (Saracostti, 2010). The aim is to improve both children's physical and psychoemotional wellbeing to ensure greater equality of opportunity to improve development (Saracostti, 2010). In their recent evaluation report on Chile Crece Contigo, Bedregal et al. (2010) highlight the family and social aspects of children's environment, such as the health of the principal caregivers (mainly mothers), and observed a high prevalence of risk factors such as low levels of social participation, stress and family violence.

The present focus of the early stimulation programs and health and child care policies in general clearly shows a shift from measures typical of developing countries on the road to overcoming poverty (the fight against high IMR, malnutrition and stunted growth) to those typical of developed countries, where investment in children's well-being and equal educational opportunities take priority. There is no doubt that these efforts contributed enormously to the improvement of both health care and early education.

As mentioned above, research studies have focused more on the cognitive and social and emotional development of children. Various studies analyzed specific variables related to the family environment, such as the use of physical punishment. It was found, for example, that a rebellious attitude was the most frequent reason for physical punishment by parents of children attending private schools, while poor school results were the main reason for physical punishment by parents of children attending public schools (Chávez, Castillo, & Lozoff, 2008; Vargas et al., 1995). With respect to maternal depression and its relation to the mother-child relationship, several studies found that in poorer families child health risks are related more to the mother's psychological characteristics than other factors, such as maternal malnutrition, education and lactation (Araya et al., 1996; Clark et al., 2006; Fritsch, Montt, Solís, Pilowski, & Rojas, 2007; Wolf, De Andraca, & Lozoff, 2002). In this respect, Fritsch et al. (2007) observed a high prevalence of depression in mothers of small children in Chile and Wolf et al. (2002) found that half of the children whose mothers suffered from depression had behavioral and emotional problems. Farkas & Valdés (2010) investigated

the relationship between maternal stress and self-efficacy in a sample of high risk children under nine months of age attending day care centers and found that family characteristics such as the number of people living in the household, per capita income, and mother's age were associated with maternal stress and perceived self-efficacy.

There are few publications about the quality of the family environment in the Chilean scientific literature. A study by Sanhueza (2006) demonstrated that the quality of stimulation in the family is a more relevant predictor for a child's psychomotor development than economic conditions. Based on the results of the Home Observation for Measurement of the Environment (HOME; Cadwell & Bradey, 1984), he also noted that levels of stimulation were medium-high in 63% of families and high in 32% of families. These results are consistent with a previous study using HOME conducted by Bustos et al. (2001) which observed adequate levels of child stimulation in families and higher levels among children who attend private schools.

Different aspects of the quality of preschool education and factors contributing to educational achievement have also been the subject of recent studies (Herrera, Mathiesen, Merino, & Recart, 2005; Villalón, Suzuki, Herrera, & Mathiesen, 2002). Evaluations of the preschool learning environment using internationally tested instruments such as the Infant/Toddler Environment Rating Scale-Revised Edition (ITERS-R; Harms, Cryer, & Clifford, 2003), Early Childhood Environment Rating Scale (ECERS; Harms, Clifford, & Cryer, 1998), and School-Age Care Environment Rating Scale (SACERS; Harms, Jacobs, & White, 1996), were reported in only two studies, which explains why reliable information about the quality of day care centers is relatively scarce in Chile. The results of these studies showed that quality levels in the majority of day care centers (newborns to two-year-olds) and preschools (five to six–year-olds) were low or medium, with higher levels in private centers. With respect to four to five-year-olds, average levels in state day care centers belonging to the National Board of Preschools (Junta Nacional de Jardines Infantiles, JUNJI) were higher than in private day care centers. However, the highest levels of quality were found in private day care centers (Herrera et al., 2005; Villalón et al., 2002).

Research interest in children's social and emotional development is recent. With the exception of two papers by Valenzuela (1990, 1997), all studies found were published in the last five years (Araneda, Santelices, & Farkas, 2010; De Aguiar, Santelices & Pérez, 2009; Lecannelier, Kimelman, González, Nuñez, & Hoffmann, 2008; Lecannelier et al., 2009; Pierrehumbert et al., 2009; Quezada & Santelices, 2010; Santelices, Olhaberry, Araneda, Tapia, & Perez-Salas, 2007; Santelices, Olhaberry, Perez-Salas, & Carvacho, 2010; Santelices et al., 2011). The investigations carried out by Valenzuela (1990, 1997) were the first in Chile to utilize the Strange Situation Procedure (SSP) to assess mother-child attachment. Furthermore, this author was the first to find an association between mother and child nutrition and the quality of infant-mother attachment in a high-risk sample and showed that severe malnutrition leads to a greater risk of developing anxious/resistant attachment and is related to low maternal sensitivity. Recent studies have shown that the distribution of attachment classifications in Chile's

population is comparable to international patterns. Roughly two-thirds of children experience secure attachment, and attachment security is greater in boys than in girls (Pierrehumbert et al., 2009) and in children born through vaginal delivery. It was also found that attending day care centers was positive for the development of children in terms of the quality of social interaction (Santelices et al., 2010).

These results contribute to the current political debate about lengthening the duration of maternity leave and encouraging the use of day care at a time when female labor force participation is encouraged as a way to help reduce poverty. Currently, about 43% of women in Chile are in the labor market and the number of children aged over three months in day care centers increased fivefold between 2006 and 2009. Medrano showed that in 2009 approximately 37.4% of preschoolers were receiving nonmaternal care, most of which on a full-time basis (Medrano, 2009). This and other issues, such as the quality of day care and its effects on children's cognitive development and mother-child attachment, is the subject of heated debate. Although research focusing on these issues in Chile in underway, the number of studies remains insufficient.

Conclusions

This study discussed childcare policy and practice, and scientific research in four distinct periods of Chile's history. The first period was characterized by the creation of a system to deal with abandon ed children. Efforts during this period focused on decreasing infant mortality rates and increasing life expectancy. In the following period efforts focused on improving children's basic living conditions and the main objectives were the improvement of child nutrition, disease prevention, and the fight against stunted growth. The third period coincided with the creation of a number of medical schools and research in the field of social sciences began to focus on child well-being. Childcare issues became a topic of intense political debate. However, this debate was abruptly interrupted by the military regime, which introduced a market oriented health care system. Recently, since Chile's return to democracy, the emphasis has shifted to promoting children's social and emotional development, as in other countries (cf. Clerkx & Van IJzendoorn, 1992). This period is what Kaempffer & Medina (1982) call stage C in the historical development of health care in developing countries characterized by overcoming economic problems, delivering sanitation solutions and the introduction of free basic health care. The contemporary program Chile Crece Contigo, which focuses on the promotion of new healthy habits, secure attachment and the improvement of children's living conditions, is an example of recent developments. The most recent period is also characterized by an important increase in empirical studies concerning these issues and associated developments in childcare policy and practice.

It is evident that a number of variables reviewed by this study, including infant mortality, malnutrition, maternal education, stunted growth, ethnicity, quality of the home environment, maternal stress and sensitivity, are closely related and cannot be easily isolated. The relationship between these variables

partly reflects a social structure inherited from colonial times characterized by strong social division and economic inequality. This situation condemns a substantial percentage of Chile's population to live in conditions that have an adverse effect on children's well-being, similar to other Latin American countries such as Argentina, Brazil, Bolivia and Nicaragua. Research has shown that a number of distal, intermediate and proximate factors are predictors of child health indicators such as infant mortality, malnutrition and stunted growth. Living conditions are important factors, especially in rural areas without adequate sanitation and sewerage, and piped water. Income and education play a role since they are determinants of nutrition, awareness and understanding of hygiene measures, number of siblings, and access to medical care. Finally, the introduction of comprehensive primary health care services providing preventive and curative care has proved effective in a number of countries such as Brazil (Alves & Belluzo, 2004; Behrman & Skoufias, 2004; Macinko, Guanais, & Marinho de Souza, 2006; Victora & Barros, 2001; Wolfe & Behrman, 1982).

It is still unclear whether the new government policy of promoting full-time day care for infants aged over three months will alleviate these problems and thus break the circle of inherited poverty. Attending day care centers may promote social and intellectual skills, but the effects of full-time day care on attachment are a cause for concern. Early and full-time day care attendance may hinder the development of secure mother-child attachment, especially where quality of day care and maternal sensitivity are low (NICHD 1997, 1999). This is worrying because insecure mother-child attachment may negatively affect children's future emotional and cognitive development. Recent research interest in Chile in issues relating to attachment is promising but a deeper understanding of the long-term consequences of the new childcare policy is necessary.

2 Childcare quality in Chile from an international perspective

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Abstract

The present study assessed the quality of 17 public childcare centers in Chile, compared it with the quality of care found in two previous Chilean samples, and placed the results in an international perspective. The Infant/Toddler Environment Rating Scale-Revised (ITERS-R; Harms, Cryer & Clifford, 2003) was used to measure quality. A moderate level of quality of childcare was found, which did not differ from the previous quality levels reported in Chile. Chilean childcare centers scored low on personal care routines (hygiene) but high on quality of caregiver-child interactions. Chile showed a rather low quality of childcare compared to the overall worldwide average quality of care, but its quality was comparable to that in European countries. It is concluded that a large increase in number of public childcare centers in Chile during the past 10 years did not negatively affect their quality. Some measures to improve Chilean childcare quality are suggested.

Keywords: Childcare, Infant/Toddler classrooms, Quality, ITERS(-R), Chile.

Introduction

Over the past decade, the number of young children attending childcare centers has increased by about 40% worldwide (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2012). This increase has been especially noticeable in Chile: the number of public childcare centers for children under two years of age grew more than fivefold (Chile Crece Contigo, n.d.). One cause for this rapid and extensive growth is the public program '*Chile Grows With You'*, introduced during the government of president Michelle Bachelet (2006-2009), a former pediatrician. The program '*Chile Grows With You'* established, among other things, free access to full-time childcare from birth up to 4 years of age for children whose parents work or study. Characteristic of the program is that it is targeted at socially vulnerable children, i.e., children who grow up in households of the lower income ranges (Chile Crece Contigo, n.d.). According to the Organisation for Economic Co-operation and Development [OECD] (2012),

around 38% of the children in Chile under the age of 3, and 75% of the children at the age of 4 attend pre-primary education. The quantitative increase is well documented but we know little about possible *qualitative* changes in Chilean childcare. In this paper, results of a study examining childcare quality in Chile are reported and compared to the results of the only two available previous studies. Additionally, the results will be compared with those from studies on childcare quality in other countries. Studies on quality of childcare have been conducted principally in North America and Europe and generally have shown benefits of good-quality care and risks of high-quantity and/or poor-quality care (e.g., Burchinal, Cryer, Clifford, & Howes, 2002; NICHD, 2002; Vandell et al., 2010). Studies have reported that high quality care predicts better results in language development and communication skills in children (Burchinal et al., 2000), and higher scores on cognitive-academic achievement measures in adolescence (Vandell et al., 2010).

In the Chilean context, Noboa-Hidalgo and Urzúa (2012) analyzed data from a longitudinal study (the JUNJI Longitudinal Study) and found positive effects of childcare attendance on cognitive and emotional regulation outcomes, but negative effects on child-adult interactions. Like many other researchers, these authors stressed the importance of quality of care for child outcomes, especially in infant classrooms. Seguel et al. (2012), using the same data set as Noboa-Hidalgo and Urzúa, analyzed the differential effects of childcare attendance on children's development and learning. The authors concluded that children who had attended childcare did not differ on cognitive outcomes compared with children who had received maternal care exclusively. However, there was a positive effect on the cognitive development when children were enrolled in childcare after three years of age. According to the authors, the quality of the caregiver-child interactions is the most likely explanation for this positive effect (Seguel et al., 2012).

These studies illustrate that quality of care is a potentially important determinant of child outcomes. When defining childcare quality, a distinction is often made between structural quality - including more distal factors (such as group size, caregiver-child ratio, and caregiver education) that are assumed to affect children's development in an indirect way - and process quality, which refers to the quality of the caregiving process (see Bronfenbrenner & Morris, 1998; Clarke-Stewart & Allhusen, 2005; Vandell, 2004). Caregiver-child interactions constitute the core of process quality. In this study, both structural and process quality are examined. Process quality has been operationalized broadly, including the daily experiences that children have with caregivers, peers, and materials. According to Cryer, Tietze, Burchinal, Leal, and Palacios (1999), process quality encompasses "the activities that are carried out to protect children's health and safety, and to encourage their positive physical, language, intellectual, emotional, and social development" (p. 340). To measure childcare quality, several observational scales have been developed. The most widely used scales to measure process quality that cover all the elements described, are the Early Childhood Classroom Environment Rating Scale and its revision (ECERS and ECERS-R, respectively; Harms & Clifford, 1980, Harms, Clifford, & Cryer, 1998) used to evaluate preschool classrooms, and the Infant-Toddler Environment Rating Scale and its revision (ITERS and ITERS-R, respectively; Harms, Cryer, & Clifford, 1990, 2006) used to evaluate infant and toddler classrooms. These Environment Rating Scales (ERS) have been widely and internationally used and reflect various aspects of childcare during different routines and activities.

Chilean studies on quality of childcare

Three previous studies analyzing process quality of childcare in Chile were found (Dominguez, Moreno, Narváez, Herrera, & Mathiesen, 2008; Herrera, Mathiesen, Merino, & Recart, 2005; Villalón, Suzuki, Herrera, & Mathiesen, 2002). In all three studies, the ERS were used. Villalón et al. (2002) included 120 randomly selected preschool classrooms and the ECERS was used to measure process quality. The authors reported that the average quality of care was moderate but a high number of centers (21%) showed low quality of care.

Herrera et al. (2005) examined the quality of childcare in 63 infant/toddler classrooms using the ITERS. Additionally, quality of care was measured in a sample of 120 preschools and 168 elementary school classrooms with the ECERS and the School Age Care Environment Rating Scale (SACERS; Harms, Jacobs & White, 1996), respectively. They found moderate quality levels in infant/toddler classrooms, preschools, and elementary schools, with a prevalence of 68%, 12% and 75% respectively, in the category low quality of care.

Three years later, the same research group conducted a third quality assessment study mandated by the Ministry of Education in Chile (Dominguez et al., 2008), which involved 39 infant/toddler classrooms and 75 preschool classrooms. Quality of care was measured with the ITERS-R) (Harms et al., 2003) and the ECERS-R (Harms et al., 1998). In both infant/toddler and preschool classrooms it was concluded that the process quality of care in Chile was at a moderate level and 28% of the infant/toddler classrooms were categorized as low quality care. This study also included structural features in the analysis. A positive association was reported between the amount of hours of training of the caregivers and the process quality in infant/toddler groups (r = .45), and a negative association between the child-caregiver ratio and process quality in preschools groups (r = -23).

Childcare regulations in Chile

According to the Chilean regulations (Ministerio de Educación [MINEDUC], 2012a) childcare centers must be organized in three main groups: infants (0-2 years old), toddlers (2-4 years old), and preschoolers (4-6 years old). If group sizes exceed 21 in infant groups, 32 in toddler groups, and 35 in preschool groups, groups should be divided into more groups. Usually, the groups are split taking into account the age of the children. For instance, a large infant group may be divided into a "younger infant" group of 0-1 year olds and an "older infant" group of 1-2 year olds. In infant groups, which are the focus in this study, one professional caregiver acts as a supervisor of a maximum of 42 infants (two classrooms), supported by one assistant per seven children at the maximum. As for educational level, the professional caregiver must have a degree in higher

education (Bachelor's) obtained at a university or equivalent institute (between 4-5 years of study). Assistant caregivers must have finished a basic applied program in childcare, which normally involves two years of study at high school/ nursing school level.

Childcare infrastructure is also regulated by the Ministry of Education (MINEDUC, 2011/2012b), including several quality indicators, such as indoor space, luminosity, number and type of rooms, but also the minimum equipment and materials that must be present in the room (for instance 30 building blocks, 15 books, 10 dolls, etc.). Since those regulations apply to all centers, it is expected that there is little variation in terms of structure and organization of the childcare centers in different regions in Chile.

The present study addresses three research questions. First, we assessed the process quality of care in a sample of Chilean childcare centers and examined associations with structural features (group size, child-caregiver ratio). Second, we compared childcare quality with that found in previous Chilean studies (using the ITERS or ITERS-R) of 2005 and 2008. Third, we put the results in international perspective. For this purpose, we searched for other studies that used the ITERS(-R), and examined whether quality of care in Chile differs from quality of care observed in other countries.

We hypothesized that the level of childcare quality in the present study would be lower than in previous ones, because the rapid growth of the number of childcare centers may be difficult to combine with rigorous quality checks. Furthermore, we expected quality of care in Chile to be lower compared to that in other countries because of the relatively low annual expenditure in pre-primary education in Chile. Moreover, the Chilean interest in quality of the child environment and development is quite recent in comparison with other OECD countries.

Method

Participants

We invited two organizations, which administrate public childcare centers in the Araucanía region and Castro city in Chile, to participate in the study. Directors and caregivers from childcare centers were invited to attend a general meeting in which a larger study on childcare and children's attachment relationships was introduced. Children participating in the larger study attended in total 17 full-day public childcare centers, all of which were involved in the reported study. Because, in the larger study, our main interest was in the development of children's attachment relationships, only children in infant groups were included (one infant group per center). At the start of the observations, the age range of the registered children was from one to 30 months.

Instruments

Process quality. The ITERS-R was used to measure process quality. This instrument has been used largely worldwide and several studies have demonstrated its reliability and validity (e.g., Peisner-Feinberg & Burchinal, 1997; Whitebook,

Howes, & Philips, 1990). The scale was developed to measure process quality in childcare groups with children under the age of 2.5 years. The 39 items of the ITERS-R are presented on a 7-point Likert-type scale with a detailed description for 1 (inadequate), 3 (minimal), 5 (good), and 7 (excellent). Scoring is based on observation and caregiver responses to questions on aspects of the program that are not directly observable.

The ITERS-R comprises seven subscales, that is: (a) Space and Furnishings (e.g., indoor space, room arrangement for play, child-related display), (b) Personal Care Routines (e.g., greeting/departing, nap/rest, health practices), (c) Listening and Talking (e.g., books/pictures, informal use of language), (d) Activities (e.g., fine motor, dramatic play), (e) Interaction (e.g., supervision of children, staff-child interactions, interactions among children), (f) Program Structure (e.g., free play, group time), and (g) Parents and Staff (e.g., provisions for parents, staff interaction). For each item a score is given from 1 to 7, resulting in an average score for process quality across all items. Each item equally contributes to the average process quality score. *Inadequate* encompasses childcare that does not even meet custodial care needs, *minimal* describes childcare that meets custodial and to some small degree basic developmental needs, *good* describes the basic dimensions of developmental care, and *excellent* describes high-quality personalized care. Based on the mean scores across the items, classrooms can be classified according to the quality levels *low* (M score < 3), *moderate* ($3 \leq M$ score < 5), and *high* (M score ≥ 5).

Following other studies, the scores of the subscale Parents and Staff were not included in calculating the mean score for process quality, because the items from this subscale do not reflect the children's everyday experiences (Bisceglia, Perlman, Schaack & Jenkins, 2009; Fenech, Sweller & Harrison, 2010; Gevers Deynoot-Schaub & Riksen-Walraven, 2005; Tietze & Cryer, 2004; Vermeer et al. 2008). Additionally, items 21 (Sand and water play) and 23 (Use of TV, video, and/or computer) were excluded because the majority of the children in our sample were infants and those items are not applicable for that age group. Internal consistency (Standardized Cronbach's α) of the total ITERS-R scale (29 items) was .70.

Structural features. Data on the number of children (group size), the number of caregivers, and the number of children under the care of one caregiver (child-caregiver ratio) was retrieved from the observations. Furthermore, the professional caregiver from each infant group was asked to fill out a questionnaire including questions about her age, formal education and additional training in child development, as well as working experience in childcare, specifically in infant/toddler groups.

Inter-rater reliability

ITERS-R. Before the study, an expert coder (HV) trained two observers (RC and CDH) in the ITERS-R. After a general introduction with video-observations, each observer completed three field observations supervised by the expert trainer using the ITERS-R. Each observation was followed by an item-by-item debriefing with the expert trainer, after which inter-rater agreement was determined. Inter-

rater reliability was established to a criterion of 80% agreement within one rating point for three consecutive observations. The mean percentage of agreement for the three consecutive observations was 90% (range 80%-97%). To control for observer drift, double coding was performed three times during the observations (18%). Both observers visited a group together and independently scored the ITERS-R. The average intra-class correlation (single rater, absolute agreement) across three observations was .80.

Procedure

Observations

The observations took place from October 2012 to January 2013. We administered the ITERS-R during 3 hours of observations (9:00AM to 12:00PM), followed by an interview of around 20 minutes with the professional caregiver to obtain information on ITERS-R items that could not be detected by direct observation. The visits were arranged on a regular weekday.

International comparison

For the international comparison, we systematically searched the electronic databases ERIC, Current Contents, PsychInfo, and PubMed using single and combined search terms as follows: Infant/Toddler Environment Rating Scale*, ITERS*, child care, day care, center/centre care. Second, the references of the collected papers were searched for additional relevant studies. Studies were included if the following criteria were met: Studies (1) were carried out within childcare settings for children up to 2,5 years, (2) provide descriptive statistics for the ITERS(-R), and (3) report satisfactory inter-rater reliability for these measures in adequately trained observers. Thus, studies in which only high-quality or low-quality settings were included were not selected for this meta-analysis. Studies that targeted specific populations, such as in Head Start settings, were not included either. If a study reported on the results of a quality improvement program or an intervention, only pretest scores were used. If more than one publication was found for the same study or dataset, the most recent publication was used, unless an earlier publication provided more relevant information than the latest publication. In addition, we searched for studies in South-America, beyond the Chilean studies, published in another language than English (Spanish or Portuguese).

We finished the search in December 2012. This procedure yielded 23 publications, published from 1995 to 2011, covering a total of 2171 childcare groups or classrooms (including the reported study). Because there was substantial variation in the number of studies across countries and in the size of the samples used in childcare quality studies, an overall mean score for process quality was calculated meta-analytically using the Comprehensive Meta-Analysis Program (CMA; Borenstein, Hedges, Higgins, & Rothstein, 2009).

Results

Process Quality

Our first goal was to assess process quality in our sample and examine associations with structural features of care. Process quality reached a moderate level (M = 3.5, SD = 0.35) (see Table 1). According to the standards of the Environment Rating Scales, this score describes childcare that meets custodial care and, to a small degree, basic developmental needs. At the subscale level, the lowest score was evident for personal care routines (M = 2.4, SD = 0.42), and the highest score for the interactions subscale (M = 5.4, SD = 0.63).

Structural features

The mean of the observed group size was M = 13.88 (SD = 3.64), the mean number of caregivers (professional caregiver and assistant caregivers) was M = 4.18 (SD = 1.19), and the mean child-caregiver ratio was M = 3.43 (SD = 0.92), see Table 1. No significant correlations were found between process quality and structural features (see Table 1). Although not statistically significant, there was a trend towards positive association between process quality of childcare on the one hand and the number of caregivers present during the observations (r = .39), caregiver training in child development (r = .35), and more experienced caregivers (r = .36) on the other hand. These results indicate higher quality of care with more caregivers present and with more experienced and trained caregivers.

Table 1

Descriptive statistics for Process Quality and Structural Features, and Spearman correlations with Process Quality (n =17)

				Process quality	
	M	*SD*	*Range*	r_s	*p*
Process quality (ITERS-R)	3.5	0.35	2.8 – 4.2	-	-
Structural Features					
Group size	13.88	3.64	6 – 19	-.03	.91
Number of caregivers	4.18	1.19	2 – 7	.39	.12
Child-caregiver ratio	3.43	0.92	1.9 – 4.8	-.28	.28
Caregiver age	38.06	8.32	27 – 53	.03	.93
Training in child development[1]	0.41	0.50	0 – 1	.35	.16
Experience in Infant/Toddler group[2]	4.97	4.34	1 – 16	.36	.15

[1] 0 = no training, 1 = training in child development (attachment, sensitivity, etc).[2] In years.

Chilean Childcare Quality

Regarding the second research question, we compared the results of the reported study with those found in earlier studies in Chile in which the ITERS(-R) was used. Because the 2005 study also included private centers, whereas the other two studies only included public centers, we first performed an analysis to examine

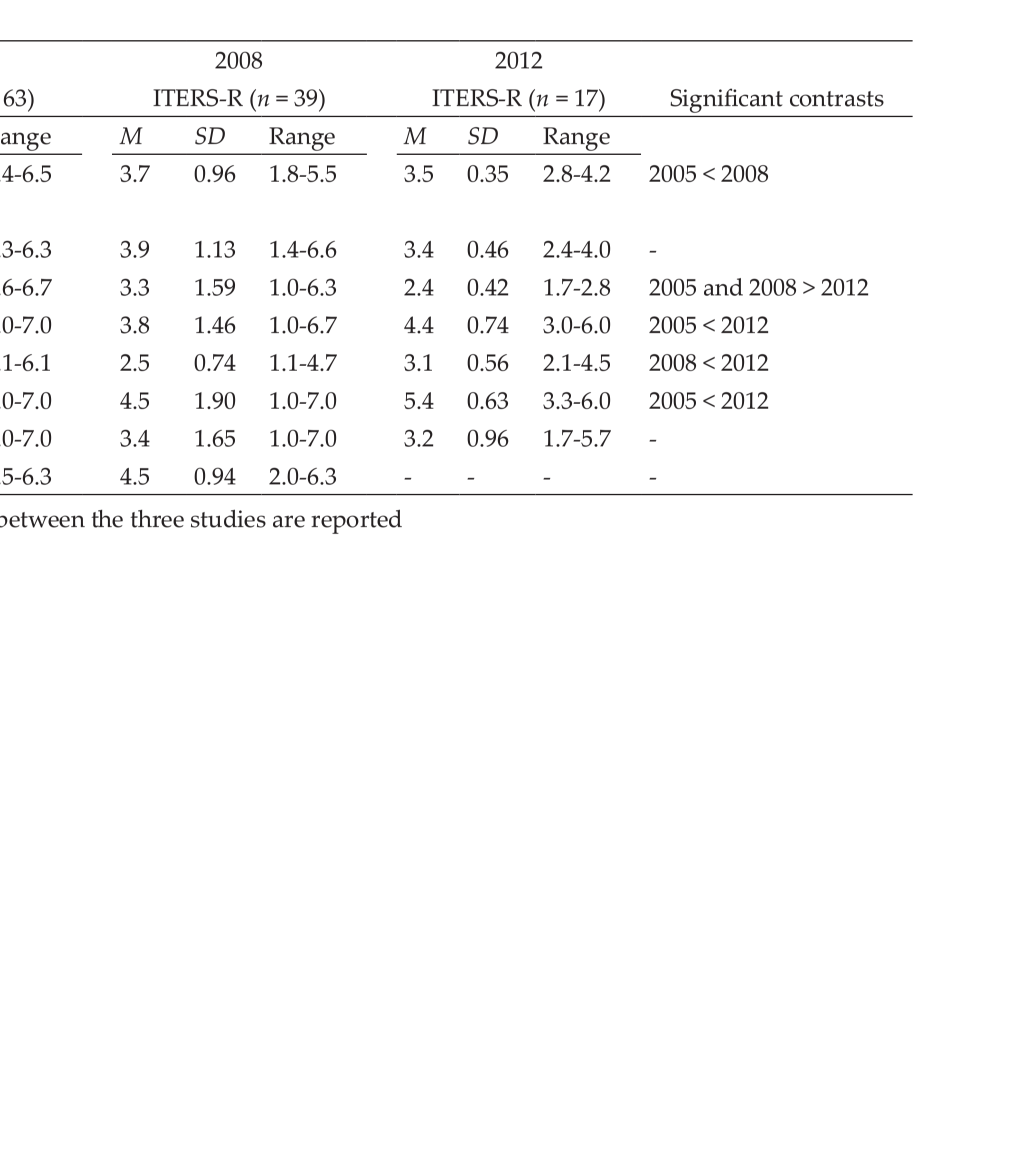
Table 2
Process Quality in Chile in 2005, 2008 and 2012

	2005			2008			2012			
	ITERS (n = 63)			ITERS-R (n = 39)			ITERS-R (n = 17)			Significant contrasts
Measure	*M*	*SD*	Range	*M*	*SD*	Range	*M*	*SD*	Range	
Total ITERS(-R)	3.2	1.07	1.4-6.5	3.7	0.96	1.8-5.5	3.5	0.35	2.8-4.2	2005 < 2008
Subscale										
Space and furnishings	3.6	1.30	1.3-6.3	3.9	1.13	1.4-6.6	3.4	0.46	2.4-4.0	-
Personal care routines	3.2	1.32	1.6-6.7	3.3	1.59	1.0-6.3	2.4	0.42	1.7-2.8	2005 and 2008 > 2012
Listening-talking	3.6	1.36	1.0-7.0	3.8	1.46	1.0-6.7	4.4	0.74	3.0-6.0	2005 < 2012
Activities	2.7	0.80	1.1-6.1	2.5	0.74	1.1-4.7	3.1	0.56	2.1-4.5	2008 < 2012
Interactions	4.0	1.49	1.0-7.0	4.5	1.90	1.0-7.0	5.4	0.63	3.3-6.0	2005 < 2012
Program structure	3.4	1.48	1.0-7.0	3.4	1.65	1.0-7.0	3.2	0.96	1.7-5.7	-
Parents and staff	3.0	0.83	1.5-6.3	4.5	0.94	2.0-6.3	-	-	-	-

Note. In the last column significant contrasts between the three studies are reported

whether process quality in private centers and public centers differed. Although the private centers showed somewhat higher level of quality (M = 3.57, SD = 1.45) than the public centers (M = 3.08, SD = 0.38) the difference was not statistically significant (t = -1.68, df = 27, p = 0.103). Therefore, we decided to use the complete sample of the 2005 study for the analysis. Table 2 shows descriptive statistics of the total scale and subscales across the three measurement points.

The three studies report a moderate level of childcare in Chile; average scores ranged from 3.2 (in 2005) to 3.7 (in 2008). When testing for differences across the three time points, we found a significant difference in mean overall scores between the 2005 and 2008 study (t = 2.38, df = 100, p = 0.019, d = 0.49). No significant difference was found between the 2012 study and the two previous studies (see Figure 1).



* $p < .05$.

Figure 1. Overall differences in process quality across the three measurement points.

T-tests were performed to analyze statistical differences at the subscale level (see Figure 2 and Table 3). The scores on the subscale personal care and routines showed a significant decrease from a moderate level of care in 2005 (M = 3.2) and 2008 (M = 3.3) to a low level (M = 2.4) in 2012. Furthermore, mean scores on the listening-talking subscale was significantly higher in the 2012 study (M = 4.4) than in the 2005 study (M = 3.6). Scores on the subscale activities have increased in the reported study, and reached a moderate level (M = 3.1), when compared with the results in the 2008 study, which were labeled as low (M = 2.5). Moreover, mean scores on the interaction subscale have increased significantly in 2012 reaching high quality level (M = 5.4), compared with the results in the 2005 study (M = 4.0).

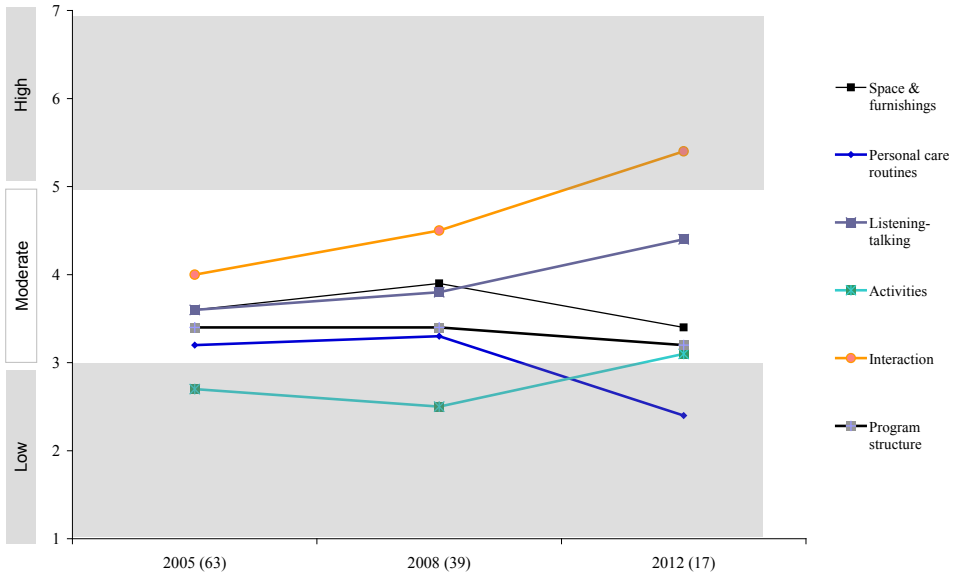


Figure 2. Trends in quality profiles across the three measurement points.

Table 3
T-values and Effect Sizes (d) for the Different Comparisons

	2005 versus 2008 (*df* = 100)		2008 versus 2012 (*df* = 54)		2005 versus 2012 (*df* = 78)	
	t	*d*	*t*	*d*	*t*	*d*
Total ITERS(-R)	2.38*	0.49	0.83	0.24	1.14	0.31
Subscales						
Space and Furnishings	1.18	0.24	1.75	0.51	0.62	0.17
Personal Care Routines	0.34	0.07	2.29*	0.67	2.46*	0.67
Listening-talking	0.70	0.14	1.60	0.47	2.33*	0.64
Activities	1.26	0.26	2.99**	0.87	1.93	0.53
Interactions	1.48	0.30	1.90	0.55	3.77***	1.03
Program Structure	0.00	0.00	0.47	0.14	0.53	0.15

* $p < .05$; ** $p < .01$; *** $p < .001$.

Chilean childcare quality in international perspective

Lastly, we examined whether quality of care in Chile differs from quality of care observed in other countries. We found 23 studies using the ITERS(-R) with a total of 2171 childcare groups in 10 countries (Australia, Brazil, Canada, Chile, Germany, Greece, Italy, Netherlands, Portugal, USA) covering four continents (Australia, Europe, North America, South America). Beyond the Chilean studies, we found only one additional study in South America, reporting childcare quality in Brazil (Rocha & Bhering, 2006). Mean ITERS(-R) score for the combined set of studies ($k = 23$, $N = 2171$) was 3.78 (*CI*: 3.41 – 4.15; $p < .01$). Mean scores ranged from 2.60 (Portugal) to 5.17 (Australia). Childcare quality did not meet custodial care needs (mean scores < 3) in Portugal (two studies; $M = 2.60$ and $M = 2.84$). Good quality care (mean scores > 5) was reported in Australia (two studies, $M = 5.07$ and $M = 5.17$).

As Figure 3 shows, childcare quality in the latest two Chilean studies was within the 95% confidence interval range, and was comparable with quality levels in most of the European studies. As a next step, we tested whether quality of care in the reported study significantly differed from the international overall mean (excluding the other Chileans samples). We found a significantly lower mean score on the ITERS-R in the reported study compared with the combined sample of worldwide studies ($k = 20$, $N = 2052$, $M = 3.83$, $SD = 0.21$) ($t = 3.70$, $df = 27$, $p = 0.001$, $d = 1.25$).

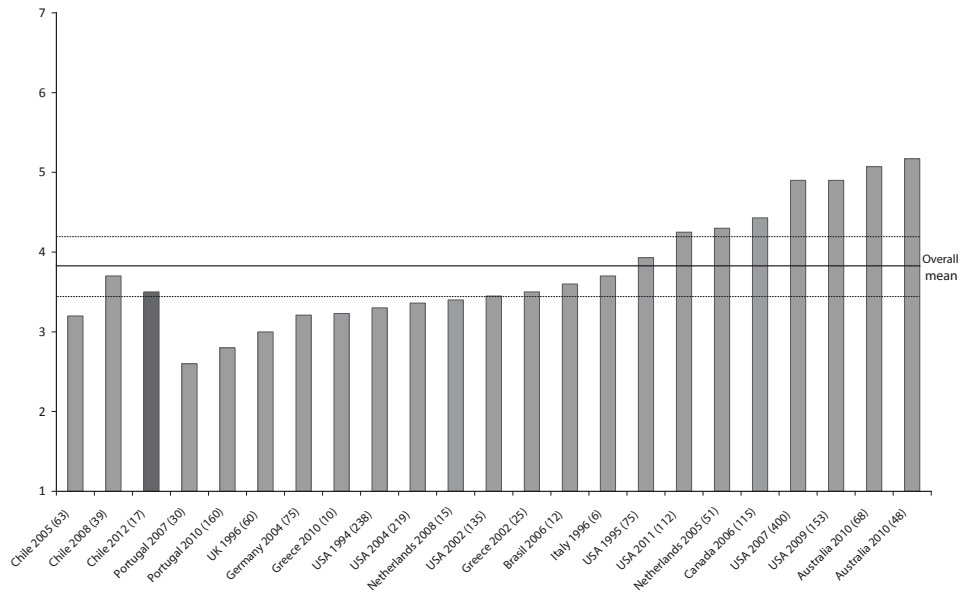


Figure 3. Childcare quality in Chile from a worldwide perspective.

Discussion

Based on our findings, we may conclude that the mean quality of Chilean childcare is moderate and has not changed substantially over the last 10 years. A comparison of childcare quality in Chile across the three time points between 2005 and 2012 showed a significant increase in process quality from the first to the second study. However, mean childcare quality remained at the *moderate* level. In an international perspective we found a significantly lower level of quality in our sample compared with the overall worldwide mean including studies from Europe, North America, and Australia, but its quality is comparable to that in European countries.

The moderate quality level is reason for concern, particularly since quality is one of the pillars to which the National Board of Nursery Schools is committed (Junta Nacional de Jardines Infantiles [JUNJI], n.d.). It should be noted that the scales used to assess quality may be somewhat culturally biased in that they strongly emphasize certain hygienic and health routines that are less common in other countries than the United States, where the scales were developed. However, our data show some insufficiencies in other quality aspects as well, such as the lack of adequate materials for activities (building blocks, books, etc.) and lack of materials and space for active physical play, outdoor activities and science education. These results are surprising, considering that the Ministry of Education and JUNJI have set up regulations for childcare quality including a list of materials and furniture that should be present in childcare centers. These requirements match well with what is called high-quality care in the descriptions of the equivalent items of the ITERS-R (MINEDUC, 2011/2012a,b). Apparently, more quality checks are needed, especially with respect to the provision of materials to young children.

Mean scores on the subscales interaction and listening-talking were rather high. These ratings indicate critical features of child care quality as experienced by the children in direct interaction with their caregivers, and may thus be considered important promoters of children's cognitive and socio-emotional development. Possibly, the high level of education of the main caregivers (at least 4 years of university or its equivalent), and the high number of caregivers per classroom, permit to interact with infants and toddlers more effectively. Furthermore, we did not find any significant associations between process quality and structural indicators, indicating that variations in scores could not be explained by variations in group size or child-caregiver ratio. However, our data shows trend toward higher quality of care with more caregivers present and with more experienced and trained caregivers, which is in the same direction as was reported in the previous Chilean study. This trend could also have effects on parental decisions about childcare. As Rose, Vittrup, and Leveridge (2013) found, parents are influenced by such aspects when they have to select a childcare center for their child. Moreover, the presence of more caregivers in the classroom decreases the child-caregiver ratio, which has been reported to be the most important criterion for married mothers when selecting a childcare center (Leslie, Ettenson, & Cumsille, 2000). Therefore, it is recommendable that this structural information is available to parents.

Comparing the three Chilean studies, we found that contrary to our expectation the strongly increased enrollment of infant and toddlers was not accompanied by an equally strong decrease of the quality of care. This stability can be seen as a satisfactory result given that in other countries, such as the Netherlands, an increase in childcare coverage led to a deterioration of its quality (Vermeer et al., 2008). Possibly, the caregivers' professional level (higher education, additional training in child development) serves as a buffer: it is conceivable that scores remain relatively high on subscales such as helping children, understand and use language, supervision of play and learning and aspects of interaction because of the high professional level of caregivers.

Mean level of Chilean childcare quality was lower than the world average, as expected. This may reflect the fact that the annual expenditure per child in pre-primary education is one of the lowest in the OECD countries, slightly more than half of the average annual expenditure in OECD countries (OECD, 2012). However, Chile does remarkably well: the mean level of Chilean childcare is comparable to that of the European countries who invest far more in pre-primary education. Also, the world average in our sample is somewhat inflated by an overrepresentation of American studies. In the US, publicized scores on the Environment Rating Scales form part of a procedure to improve the quality of care, which promotes a higher minimum standard of care (Love et al., 2003).

Some limitations of the current study should be discussed. First, the sample size is rather small and may not be representative of the whole country. We did, however, corroborate most of the findings of the previous studies. Secondly, the scales used in the three Chilean studies were comparable but not identical, which may be reflected in the difference found between the first two studies. Moreover, despite their widespread use, the scales used may be somewhat culturally biased, for example in their emphasis on strict hygienic routines and in their emphasis on the benefits of playing outside. For instance, both caregivers and parents in Chile share the conviction that children playing outside more easily contract diseases, especially in wintertime.

In sum, although Chilean childcare centers do not score very high on quality, the quality levels are comparable to those in European countries. Moreover, Chilean childcare quality can be still improved by taking simple measures. One such measure might be to strengthen supervision and to demand compliance with the existing regulations, especially with respect to furniture and materials available to the children. This is particularly important given that a recent study shows that the demand for childcare centers for vulnerable children in Chile will grow, among other things, because mothers increasingly join the paid workforce (Dussaillant, 2012).

3 The validity of the Massie-Campbell Attachment During Stress Scale (ADS)

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Abstract

The present study is the first step towards validating the Massie-Campbell Attachment During Stress Scale (ADS). The ADS is a one-page guide to standardized observation of mother-infant interactions meant to detect insecure attachment behaviors. So far it was used infrequently in scientific research but it is widely applied in the Chilean public health system. To establish the ADS's convergent, concurrent, and construct validity, the ADS was compared with the Strange Situation Procedure (SSP) and correlated with maternal sensitivity. Videotapes of the SSP were coded with the ADS and the resulting ADS attachment classifications were compared with the SSP classifications. It was found that the ADS can distinguish moderately well between securely attached and non-securely attached mother-infant dyads, and the ADS was also associated with observed maternal sensitivity. However, the ADS suffers from a number of limitations that warrant further study. In particular, the ADS proved unable to detect resistantly attached mother-infant dyads. Revision of the scale and its scoring rules seems necessary in order to improve its validity as a screening device in scientific research and clinical practice.

Keywords: Attachment, Massie-Campbell Attachment During Stress Scale (ADS), validation, mother-infant relationships

Introduction

Attachment theory states that infants have a biological predisposition to maintain proximity to adults. By crying, babbling, and smiling they signal their state of mind and elicit the adults' nurturing behavior. Over the first year of life they will develop an attachment to one or more caregivers (Bowlby, 1969/1982). Depending on the caregiver's sensitivity, the infant's temperament, and various other factors, different patterns of attachment may result. These patterns can be established in the laboratory setting through the so-called Strange Situation Procedure (SSP)

developed by Ainsworth (Ainsworth & Wittig, 1969; Ainsworth, Blehar, Waters, & Wall, 1978). In a series of episodes the child is separated from and reunited with the caregiver. Based on the child's reactions to these events, children are classified as having a secure, avoidant, resistant, or disorganized attachment to the caregiver. The pattern of attachment predicts later child behaviors. Because the SSP requires intensive training and a well-equipped laboratory room, various inexpensive and easy-to-use screening devices have been developed.

The Massie-Campbell Scale of Mother-Infant Attachment Indicators During Stress, also referred to as the Attachment During Stress scale (ADS; Massie & Campbell, 1992), is an observation rating scale designed to assess interactions between mothers and children from birth to 18 months old in "any setting where mother and baby are together; however, a mild stress such as a well-baby physical examination, heightens the interaction of mother and child, which makes the behaviors more evident" (Massie & Campbell, 1983, p. 395). As examples of other mildly stressful situations the authors mention activities such as dressing, bathing, playing, and family mealtimes. They also state that the ADS may be applied during mother-infant separations or reunions at a daycare center and during "a structured and standardized brief mother-infant separation and reunion experience [such] as… [in] the Strange Situation" (Massie & Campbell, 1983, p. 402). The developers of the ADS designed this scale as an inexpensive and quick rating scale to detect potentially problematic mother-infant interactions and to increase the awareness of clinicians of essential parameters in infants' psychological development. A special feature of the scale is that both mother and infant behavior are scored. Thus, the observers must separately code mother and infant attachment behaviors such as gazing, vocalizing, holding, touching, affect, and proximity seeking. Basically, the scale requires determining the intensity of these behaviors from "almost not responding" to "overly strong reaction" (Massie & Campbell, 1992, p. 19).

The ADS forms part of a newer set of measures of attachment developed for various age groups and purposes (e.g., *The Main-Cassidy Attachment Classification for Kindergarten-Age Children,* Main & Cassidy, 1988*; The Attachment Story Completion Task ASCT,* Bretherton, Ridgeway & Cassidy, 1990; *The Attachment Q-Sort AQS,* Waters, 1995). With the exception of the ADS, for which so far no information was available, these alternative measures of attachment show acceptable reliability and validity (Solomon & George, 2008).

Need for validation

To date, the ADS has been used in relatively few research studies. Chan (1987) taught mothers of dyads with lower ratings on the ADS to recognize behavioral cues of their babies, which increased maternal vocalizing and touching as compared to a control group. Lecannelier et al. (2009) used the ADS to classify dyads into secure and insecure and offered mothers of insecure dyads classes in baby massage and attachment. After this intervention, the number of securely attached children had increased significantly. Henderson (1990) conducted a study with a high-risk sample and used the ADS to measure the quality of attachment. The results indicated that traumatized mothers and infants more

often showed poor quality of interactions. Low (1982, cited in Massie & Campbell, 1992) studied the effect of family daycare on the infant-mother relationship in early infancy and found that mother's responsiveness, evaluated with the ADS in the reunion episode of the SSP, was higher in the group of securely attached infants than in the group of insecurely attached infants, as measured with the SSP. Hale, Holditch-Davis, D'Auria, and Shandor Miles (1999) concluded that the ADS can be a useful screening tool in a pediatric context, above all as a measure to detect infants at high-risk. However, these authors also argued that the ADS' validity and reliability need to be established.

The need to establish the validity of the ADS becomes more obvious when we realize that this instrument is already being used on a massive scale—to date, more than 200.000 cases—in Chile (Causadias, Sroufe, & Herreros, 2011). Currently, the ADS is used as a measure to detect problematic mother-infant interactions in the Primary Health System in Chile during the regular pediatric health checks at 4 and 12 months old. Trained observers using the ADS guideline score the behavior displayed by infant and mother immediately after the physical examination . As such, the ADS forms part of the nation-wide program '*Chile growth with you'* that was implemented in 2007 (Bedregal, 2008). The ADS is used in this program to classify infants as securely attached, insecure avoidantly attached or insecure resistantly attached to the mother. This classification is followed by preventive interventions for mothers of insecurely attached infants, regardless of the type of insecure attachment.

The original and most widely used instrument to detect different patterns of attachment is the above-mentioned SSP. It is known as the 'gold standard' measurement of attachment in infants and its value in terms of reliability and validity is well established (Ainsworth et al., 1978). For this study, we decided to apply the ADS scale during the reunion episodes of the SSP, using video recordings from a previous study (Klein-Velderman, Bakermans-Kranenburg, Juffer, & Van IJzendoorn, 2006). Use of the reunion episodes is appropriate as in other episodes either parent and child are not present together or maternal behavior is constrained by experimental instruction (i.e., the request not to initiate interactions).

Thus, in the current study we examine the quality and applicability of the ADS through establishing its convergent, concurrent, and construct validity. For this purpose, the behavior of children previously videotaped in the SSP is reanalyzed using the ADS. If the ADS is a valid instrument to assess different patterns of mother-infant attachment, we expect to find a significant association with the attachment classifications reached by the 'gold standard', the SSP (convergent validity). To the extent that the ADS assesses maternal behavior we also expect a positive correlation with measures of maternal sensitivity (concurrent validity). Finally, it is expected that experts in attachment will classify the behaviors described in the ADS in the same attachment categories as the developers of the ADS did (construct validity).

Method

Participants

The sample consisted of 69 low SES Dutch mother-infant (46% boys) dyads of Caucasian origin who participated in a study conducted by Klein-Velderman et al. (2006). Originally, 83 dyads participated in that study, but 14 of them could not be included in the present analysis because the videotapes were in a poor condition. Mother-infant dyads were videotaped in the laboratory during the SSP when the children were 13 months of age. In the present study, the same videotapes were used to apply the ADS. In the Klein-Velderman et al. study, maternal sensitivity was additionally measured in two sessions of free play, the first one at home (11 months old) and the second one in the laboratory after the SSP. The mother's mean age during the SSP was 27.8 years (*SD* = 3.62), and their mean educational level was 2.48 (*SD* = 0.99) on a scale from 1 to 4, where 1 represents primary school or junior secondary vocational education, and 4 indicates senior secondary general education followed by senior secondary vocational education.

Instruments

Attachment During Stress scale (ADS)

The ADS is a one-page guide to standardized observation of mother-infant behavior composed of two separate subscales: one for infant behavior and one for mother behavior (see Appendix). It can be used in mildly stressful situations, such as a pediatrician's consult, but also during naturally occurring activities like dressing, feeding, ending bathing (Massie & Campbell, 1992), and the reunion episodes in the SSP (Massie & Campbell, 1983). Each subscale contains seven typical attachment behaviors: gazing, vocalizing, touching (a) (infant clinging), touching (b) (withdrawal contact), holding, affect, and proximity. These seven behaviors are scored on a scale from 1 to 5, where scores 1 and 2 indicate less contact and avoidant behavior, scores 3 and 4 represent the use of the attachment figure as a secure base, and score 5 represents overanxious behavior or an unusually strong reaction to stress (see Appendix). These scores permit to count frequencies of occurrences of behavior classified as secure, avoidant, or resistant but they cannot be treated as a numerical variable. Therefore, the classification was based on frequencies and not on means (see below). The original scale did not consider the more recently found pattern of disorganized attachment, hence attachment classification in this validation study is restricted to the distinction between A (insecure-avoidant), B (secure), and C (insecure-resistant).

The ADS manual does not contain a strict procedure to arrive at a single or correct score (Massie & Campbell, 1992). Hence, the scoring procedure as described in the ADS manual was adapted to allow a more formal and quantitative analysis of the data. Each attachment behavior displayed during the reunion episodes (episodes 5 and 8) of the SSP was given a score of 1, 2, 3, 4 or 5 (or not observed). If 50% or more of these scores were coded 1 or 2, the behavior was classified as insecure-avoidant (A). If at least 50% of these scores were coded 3 or 4, the behavior was classified as securely attached (B), and when at least 50%

of the scores were placed in 5 the behavior was classified as insecure-resistant (C). For analytic purposes, and contrary to the normal ADS procedure, scores were determined independently for both the infant and mother scales. From a psychometric viewpoint independent coding is a necessary condition for the independent use of scales in statistical analyses.

The SSP videotapes were scored by four raters. Two master students received an intensive training in the ADS coding system by the first author of this paper. Training consisted of four two-hour meetings during which the students observed videotaped interactions of mothers and infants during potentially mildly stressful home situations such as changing diapers, feeding, and free-play. These videotapes had been recorded and coded in a pilot study in a Chilean sample. Then the students were asked to code the ADS for 20 dyads (children age *M* = 12.65 months, *SD* = 1.42). For both raters, the inter-rater reliability with attachment classification ABC was high (kappas of .87 and .99, respectively). The first author and another expert coder were trained in the application of the ADS by the Center for Intervention and Developmental Studies of Children at the Universidad del Desarrollo of Chile in Santiago.

Infant-mother attachment

Attachment was observed in the Strange Situation Procedure (Ainsworth et al., 1978) when the children were 13 months old (Klein-Velderman et al., 2006). The procedure consists of a series of episodes where the infant is exposed to mildly stressful events, specifically during two separations from the mother. The infants were classified according to Ainsworth's system in three different categories: secure (B), insecure-avoidant (A), and insecure-resistant (C). Two of the authors of the Klein-Velderman et al. study (MB-K, MHvIJ) coded the videotapes of the SSP. The inter-rater reliability was adequate (92%, *kappa* = .73).

Maternal sensitivity

Maternal sensitive responsiveness in the Klein-Velderman et al. study was assessed using the Ainsworth's rating scale (Ainsworth, Bell, & Stayton, 1974) on the basis of 10 minutes of free play at home and in the lab when the children were 11 and 13 months old. In both sessions, mothers were provided with the same collection of toys and were instructed to play with their infant as they usually did. The Ainsworth's rating scale provides scores ranging from (1) highly insensitive, (3) insensitive, (5) inconsistently sensitive, (7) sensitive, to (9) highly sensitive. Mean scores in sensitivity between the two time-points were significantly correlated ($r = .45$, $p < .001$). In the study reported here, aggregated scores in sensitivity are used across both sessions. Inter-rater reliabilities were high (mean intraclass correlation $r = .84$, range $r = .83$ to $.86$, $n = 25$).

Procedure

The validity of the ADS was established in three steps. First, convergent validity was determined by encoding the reunion episodes of the SSP using the ADS scales, and establishing the degree of concordance between the ADS and SSP classifications. Second, concurrent validity with the ADS mother scale and the

ADS infant–mother classifications was tested using maternal sensitivity scores established with the Ainsworth et al. (1974) sensitivity rating scale in the prior study. Third, the construct validity was measured by asking experts in attachment theory to classify the statements that make up the ADS scale according to the original SSP classification system.

As for *convergent validity*, the reunion episodes of the Strange Situation Procedure were coded by four trained raters using the ADS scale. To obtain independent scores of infant and mother subscales, respectively, two raters coded infant behavior and two raters coded mother behavior. The raters did not have previous experience with the Strange Situation Procedure and did not have any information about the sample or previous classifications. The inter-rater reliability for the raters using the first author's scores as a criterion ranged from fair to excellent agreement according to Cicchetti's (1994) criteria: for the infant subscale *kappa* = .42 (n = 31), and *kappa* = .54 (n = 38), percentages of agreement were 74% and 79%, respectively. For the mother subscale *PABAK* = .42 (n = 31), and *PABAK* = .90 (n = 38), percentages of agreement were 71% and 95%, respectively. Due to the skewed distribution for the mother subscale, the prevalence-adjusted and bias-adjusted kappa $PABAK = \frac{(2n/N)-0.5}{1-0.5} = 2p_o - 1$ (Byrt, Bishop, & Carlin, 1993) was used to compute inter-rater reliability (cf. Fitzgerald & Coop, 2011).

The results were analyzed in terms of total scale and infant and mother subscales separately. For the analysis, we considered both the standard three-way attachment classification A-B-C and the split between B versus non-B, which combines insecure-avoidant and insecure-resistant attachment classification into one category (i.e., non-B).

In order to test *concurrent validity*, associations with maternal sensitivity were analyzed. We compared the means in maternal sensitivity between the secure and insecure groups (i.e., B versus non-B) as classified with the ADS mother subscale. In this way, we also examined whether attachment as measured with the ADS is significantly correlated with maternal sensitivity, as is to be expected on the basis of previous studies (meta-analyzed in De Wolff & Van IJzendoorn, 1997).

Four experts in attachment and the SSP from our department, who did not have any previous knowledge of the ADS, were asked to participate in the *construct validity* procedure. The ADS scale was presented to them without any indication of the interpretation of its items, and they were involved in an interview based on the Q-sort principles. Each of the ADS statements was printed on a card (70 cards in total, 35 cards covering infant's behavior and 35 cards covering mother's behavior) and presented to the experts in two sessions, one for statements about the mother and one for statements about the infant. In a first round, they were asked to select the statements that best fit in the A, B, or C classification, resulting in three different piles for each category. Then, starting from these three piles, they were asked to make three new piles with a prescribed number of cards in each pile, that is, 14 cards for piles A and B, and 7 cards for pile C. In this way, each original statement of the ADS was classified into one of the three attachment classifications A, B, C. The analysis was based on the agreements found between the classification by the attachment experts and the ADS classification.

Results

Descriptive results: Distributions

T-tests and χ^2 testing showed that the mother's age and educational level and the distribution of the child's gender did not differ significantly across attachment classification as measured with the ADS scale (see Table 1). The distribution of the attachment classifications showed that with the ADS scale 81.2% of the infants were classified as securely attached (see Table 2). However, according to the SSP coding system only 60.9% of the infants were securely attached. Avoidantly attached infants represented 17.4% of the sample, as scored with ADS, which was similar to the percentage of avoidant children using the SSP. Finally, the percentage of infants classified as insecure-resistant was only 1.4% when the ADS was used as compared to 21.7% when the SSP classification system was applied.

Table 1

Descriptive Statistics for Mother and Child Variables by ADS scale Attachment Classification

	ADS Classification						
	Secure			Non-secure			
	n	*M*	*(SD)*	*n*	*M*	*(SD)*	*t*
Mother variables							
Age	51	27.53	(3.41)	17	28.53	(4.18)	0.98
Education level	52	2.58	(0.94)	17	2.18	(1.13)	-1.45
Sensitivity	52	5.66	(1.15)	17	4.71	(1.36)	-2.85**
Child's gender		%			%		χ^2
Boys	23	71.9		9	28.1		0.39
Girls	29	78.4		8	21.6		

** $p < .01$

Convergent validity: SSP and ADS classifications

At the level of secure versus insecure attachment the ADS_{BnonB} scale was significantly associated with the attachment classification by the SSP_{BnonB}, χ^2 (1, N = 69) = 13.20, $p < .001$, d = 0.96. When each subscale (infant versus mother) was considered separately, classifications of the infant subscale (B versus non-B) were still associated with the SSP_{BnonB} (χ^2 [1, N = 69] = 4.94, p = .026, d = 0.50). However, classifications of mother behavior (B versus non-B) with the ADS subscale were not significantly associated with the SSP_{BnonB} (χ^2 [1, N = 69] = 3.50, p = .061, d = 0.43) (see Table 3).

The standard three-way attachment classification ABC with the ADS scale showed less agreement with the SSP classifications. The chi-square statistic was significant (χ^2 [2, N = 69] = 17.69, $p < .001$). However, the proportion test with the SSP classification distribution as criterion (Table 2) showed an overrepresentation of securely attached infants when they were coded with the ADS scale in comparison to the SSP (standardized residual = 14.00, $p < .001$). Furthermore, Table

2 shows an underrepresentation of resistantly attached infants when scored with the ADS (standardized residual = -14.00, $p < .001$). Children who were classified as resistantly attached in the SSP are classified as securely attached using the ADS (Table 2).

Table 2
Cross-tabulation of Strange Situation (SSP) and Attachment During Stress (ADS) ABC Classifications (N=69)*

		ADS Classifications			Total
		A	B	C	
SSP Classifications	A	7	5	0	12 (17.4%)
	B	4	38	0	42 (60.9%)
	C	1	13	1	15 (21.7%)
Adjusted standardized residuals		0.00	+14.00	-14.00	
Total		12 (17.4%)	56 (81.2%)	1 (1.4%)	69 (100%)

Note: Proportion test with SSP distribution as criterion: χ^2 *(df* = 2) = 17.69, $p < .001$.
*Attachment Classifications: A = Insecure-avoidant; B = Secure; C = Insecure-resistant

Concurrent validity: ADS and SSP associations with sensitivity
Based on the ADS_{BnonB} classification, maternal sensitivity scores from Klein-Velderman et al. (2006) were used to analyze the concurrent validity of the ADS. Significant differences between the two classifications were found. For the ADS_{BnonB} total scale, the insecure group scored significantly lower in maternal sensitivity (M = 4.70; SD =1.35) than the secure group (M = 5.66; SD =1.14), t = -2.85, df = 67, p = .006, d = 0.76. Similar results were found for the ADS_{BnonB} mother subscale, M = 4.83; SD =1.14 for the insecurely attached and M = 5.59; SD =1.25 for the securely attached group, t = -2.11, df = 67, p = .038, d = 0.63. No significant differences were found for the ADS infant subscale (see Table 3).

The association between attachment classification with the ADS scale and maternal sensitivity was in the expected direction, that is, mothers of securely attached infants displayed more maternal sensitivity during playful interactions. A similar association was found for the SSP_{BnonB} classifications, M = 4.99; SD =1.24 for the insecurely attached group, and M = 5.71; SD =1.20 for the securely attached group, t = -2.41, df = 67, p = .019, d = 0.59.

Table 3
Associations between Attachment During Stress Scale (ADS_{BnonB}) with Strange Situation Security (SSP_{BnonB}) and Maternal Sensitivity (N=69)

	Strange Situation security		Maternal Sensitivity	
ADS security	χ^2	*d*	*t*	*d*
$ADS_{BnonB\ Total}$	13.20***	0.96	-2.85**	0.76
ADS_{BnonB} Infant	4.94*	0.50	-1.08	0.29
ADS_{BnonB} Mother	3.50	0.43	-2.11*	0.63
SSP_{BnonB}	-	-	-2.41*	0.59

* $p < .05$ ** $p < .01$ *** $p < .001$.

Construct validity: expert evaluation of the ADS
In 40 out of 70 statements (57.1%), three or four experts agreed to place the statement under the 'correct' (according to the developers of the ADS) attachment ABC classification. Nineteen statements were placed in a different attachment ABC classification. Consistently, these diverging statements presented a pattern of different classifications in two directions: scores for resistant (ADS score 5) were always labeled as secure, whereas scores for avoidance (ADS scores 1 or 2) were always labeled as resistant. When secure scores (ADS scores 3 or 4) were classified differently, it was almost always into the avoidant direction (4 out of 5 statements).

When the expert ratings were analyzed separately for each attachment behavior, it turned out the items that presented most problems were 'holding' and 'affect', in both the infant and mother subscales. At least 3 of the 5 scores for these attachment behaviors showed disagreement between the experts' opinion and the original scale. Moreover, 11 of the 14 ADS statements meant to designate resistant attachment led to disagreement between the experts or were moved to a different attachment classification by them, which implies that the ADS has a problem in diagnosing resistantly attached behavior.

When analyzing the ADS in terms of secure versus insecure attachment (B versus non-B), the experts agreed with 48 of the 70 statements (68.5%) of the ADS, which suggests that according to the attachment experts the construction of the ADS still leaves something to be desired.

Discussion

In the present study, we examined the validity of the Attachment During Stress (ADS) scale. It was found that both the ADS total scale and the ADS infant subscale concur reasonably well with the SSP in distinguishing secure versus insecure (B versus non-B) mother-infant dyads in a stressful situation, such as the reunion episode of the SSP. Also, both the ADS total scale and the ADS mother subscale agreed moderately well with a measure of maternal sensitivity, whereas the infant ADS scale was not associated with maternal sensitivity. Thus, on the

whole, the ADS does a satisfactory job in distinguishing between secure and insecure attachments, and between more and less sensitive mothers.

Although the ADS infant subscale and the ADS total scale agree reasonably well with the SSP in distinguishing secure from insecure mother-infant attachment relationships, it should be noted that the ADS yields an overrepresentation of securely attached infants and an underrepresentation of resistantly attached infants in comparison to the SSP. On further inspection by experts, it turned out that the ADS statements seem inadequate to capture the full range of possible mother-infant attachment relationships. In particular, attachment experts found fault with the statements meant to designate resistant attachment. Moving these statements to another attachment classification, however, would result in an unequal distribution of statements meant to designate the various attachment classifications. Hence, the adding of new statements to the ADS seems necessary to transform it into a more accurate and valid instrument of attachment assessment. Revising the ADS scale descriptions for 'holding' and 'affect' should receive special attention, as should the boundary between resistance and security.

This construct analysis through expert ratings explains why it proved impossible to reproduce the original three-way SSP classifications in terms of secure, avoidant, and resistant attachment (ABC) when using the ADS. Clearly, the ADS is not able to reproduce the subcategories of avoidant and resistant attachment within the insecure category, because it fails to designate the resistantly attached children. That we nevertheless found a satisfactory convergent validity in terms of insecure versus secure attachment classifications can be explained by the fact that the majority of the infants were classified secure in both the ADS and SSP systems, with a rather high agreement between the two classifications. Agreement between ADS and SSP classifications for resistant attachments, however, is virtually absent, which is a cause for concern. In addition, taking into account that the ADS scale is being used in clinical settings, it seems important to expand the scale by including indicators of disorganized attachment, which is considered a risk factor in child development.

Independent scoring of mother and child behaviors allowed us to understand which aspects of the mother-infant relationship are captured by the ADS. In current practice, mother and infant behaviors are judged simultaneously by the same observer, which may decrease the validity of each of the ADS subscales as 'halo' effects might influence the coding. That is, if the same coder is responsible for both the mother and the child scales, his or her first impression of the mother might unduly affect the rating of the child, and the other way around. Future users of the ADS might consider scoring mother and child behavior independently given that an accurate diagnosis of the various facets of problematic mother-infant relationships is of great importance in clinical practice. Also, it can be argued that a combined mother-child rating confounds attachment with sensitivity. For research purposes, the use of independent ratings of mother and child behavior is mandatory. Interventions studies, for example, would benefit from independent assessments of mother and infant behaviors, where mother behaviors reflect sensitivity and child behaviors reflect attachment.

The results of the present study should be interpreted with some caution. The attachment classification resulting from the ADS was compared to the attachment classification resulting from the SSP, the gold standard in attachment research. This is an important but first step in the validation process. The ADS was not specifically designed to be used in the laboratory and the next step should therefore be to compare its results with those of other out-of-the-lab measures. This can provide additional information about its validity in the context where it is currently used (e.g., well-baby clinics, home environment). In addition, training with the ADS should be geared to the setting where it is used: scoring the ADS using videos is clearly different from its use in a clinical setting where behaviors have to be scored from memory and no second view is possible. Another limitation is that use was made of a low SES sample of Caucasian origin and it seems essential to repeat the present validation study in other SES samples and other ethnic groups. The latter is particularly relevant given the widespread use of the ADS in some areas in Chile where the Mapuche represent a substantial minority (Ray, 2007). Future research should also establish other psychometric aspects of the ADS, such as its test-retest reliability.

In conclusion, when applied in the reunion episodes of the Strange Situation Procedure (SSP), the ADS proves a reasonably valid instrument able to distinguish between insecurely and securely attached mother-infant dyads. It also captures aspects of maternal sensitivity. This is a remarkable result, given that the ADS was not designed to be used in such situations, where maternal behavior is constrained by experimental instruction and the focus is on infant behavior. A further step in the validation of the ADS must include comparison of SSP attachment classifications with ADS attachment classifications obtained in a naturalistic setting. Notwithstanding this first positive result, the ADS seems unfit to probe deeper into the various forms of insecure mother-infant attachment relationships and more work is needed to create more valid indicators of resistant attachment in the ADS. The present validation study implies that the ADS can serve as an inexpensive and easy-to-use first screening device in pediatric practice and research to signal potential problems in the mother-infant attachment relationship but that further investigation of potentially problematic mother-infant interactions must rely on other (clinical) instruments and procedures.

Appendix. *The Massie-Campbell Scale of Mother-Infant Attachment Indicators During Stress*

Infant's Behavior During Stress Event

	(1)	(2)	(3)	(4)	(5)	X
GAZING	Always looks away from mother's face.	Rarely searches out mother's face. Fleeting looks at mother's face.	Occasionally looks at mother's face.	Frequently long & short gazing at mother's face.	Rivets gaze on mother's face for long periods.	Behavior not observed.
VOCALIZING	Quiet. Never vocalizing.	Rarely vocalizing or whimpering.	Occasionally vocalizing or mild crying.	Frequently vocalizing or intense crying.	Uncontrollable, intense crying much of the time.	Behavior not observed.
TOUCHING (a)	Never touches or reaches toward mother.	Rarely touches mother.	Occasionally touches mother.	Frequently reaches toward & touches mother.	When close always touching mother.	Behavior not observed.
(b)	Always pulls away from mother's touch.	Frequently pulls away from her touch.	Occasionally pulls away from her touch.	Rarely pulls away from her touch.	Never pulls away from her touch.	Behavior not observed.
HOLDING	Violently resists holding; always arches away from mother.	Does not relax in mother's arms. Frequently pulls away.	Rests in mother's arms and against her shoulder. Occasionally pulls away.	Body molds to mother's. Rarely pulls away.	Actively turns & arches body toward mother. Clings strongly. Never pulls away.	Behavior not observed
AFFECT	Always intensely anguished and fearful.	Frequently irritable fearful or apathetic.	Intermittent moderate anxiety and/or pleasure or unclear.	Rare tension; largely smiling.	Always smiling.	Behavior not observed.
PROXIMITY	Never follows mother bodily or with eyes; goes to far corner or out of room.	Rarely follows mother bodily or with eyes; often at far corner of room from mother.	Intermittently follows mother bodily or with eyes.	Frequently follows mother bodily or with eyes.	Always follows mother bodily or with eyes.	Behavior not observed.

Mother's Response to Infant's Stress

	(1)	(2)	(3)	(4)	(5)	X
GAZING	Always looks away from child's face.	Rarely looks at child's face. Fleeting looks at child's face.	Occasionally looks at child's face.	Frequently long & short gazing at child's face.	Rivets gaze on child's face for long periods.	Behavior not observed.
VOCALIZING	Quiet. Never vocalizing.	Rare words, cooing or murmuring.	Occasionally vocalizing to child.	Frequently speaks, murmurs, coos.	Intense vocalizations throughout.	Behavior not observed.
TOUCHING (a)	Never touches or reaches toward child.	Rarely touches child.	Occasionally touches child.	Frequently reaches toward & touches child.	When close always touching child.	Behavior not observed.
(b)	Always pulls away from his touch.	Frequently pulls away from his touch.	Occasionally pulls away from his touch.	Rarely pulls away from his touch.	Never pulls away from his touch.	Behavior not observed.
HOLDING	Pushes upset child away, or holds away from body.	Holds child stiffly & awkwardly. Not relaxed.	Supports child relaxedly against her chest or shoulder briefly.	Body molds to child & maintains contact until child quiets.	Body inclines toward child followed by prolonged holding with molding.	Behavior not observed.
AFFECT	Always intensely anguished & fearful.	Frequently irritable fearful & apathetic.	Intermittent moderate anxiety; and/or pleasure; or unclear.	Rare tension; largely smiling.	Always smiling.	Behavior not observed.
PROXIMITY	Leaves room.	Frequently out of reach of child; or at far corner of room from child.	Intermittently standing or seated within arm's reach of child.	Frequently in physical contact with child.	Always in physical contact. with child.	Behavior not observed.

4 Childcare in Mapuche and non-Mapuche families in Chile: The importance of socioeconomic inequality

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Abstract

Two studies are reported examining ethnicity differences in child rearing between Mapuche and non-Mapuche families in Chile. The first study, the Magellan-Leiden Childcare Study (MLCS), consists of a sample of 110 mothers (n = 42 Mapuche) with children younger than one year old (M = 6.41 months old). In the second study, we cross-validated our results in a large and representative sample of 14906 mothers (n = 1050 Mapuche) and their children (M = 30.38 months old) from the Chilean Encuesta Longitudinal de la Primera Infancia (ELPI). In both studies, the actual quality of care for children provided at home was measured with the Home Observation for Measurement of the Environment. In the MLCS study, additional indicators of the childcare environment were measured, e.g. mothers' beliefs and attitudes about parenting.
The results of both the MLCS study and the ELPI study support our hypothesis that Mapuche and non-Mapuche parents do not provide substantially different child rearing environments for their children. In both studies, the differences between the two ethnic groups are explained by income, which confirms the important role that socio-economic factors play in child rearing and parenting. It is concluded that preserving cultural differences and traditions is an important goal in itself but that for childcare in Chile it seems equally important to eliminate socioeconomic inequality.

Keywords: childcare; Chile; ethnicity; inequality.

Introduction

Is the present-day Mapuche child rearing environment substantially different from the non-Mapuche environment? The Mapuche are indigenous Chilean people who form an ethnic minority group in a non-Mapuche society. The Chilean government is currently attempting to improve childcare quality by, among many other things, spreading advice that is targeted to various ethnic groups with different worldviews (Chile Crece Contigo, n.d.). Much as this policy is commendable, we do not know whether these various worldviews

actually translate into different childcare practices and different ideas about ideal motherhood. Also, we do not know whether present-day Mapuche culture is substantially different from the non-Mapuche culture with respect to child rearing. This is the first attempt to empirically investigate the actual child rearing environment of Mapuche children compared to their non-Mapuche peers. In a first study, the Magellan-Leiden Childcare Study (MLCS), we examine whether Mapuche and non-Mapuche children experience different childcare environments, and, if such differences exist, to what extent these differences can be explained by ethnicity and/or socio-economic status. In the second study, using data from the Chilean Encuesta Longitudinal de la Primera Infancia (ELPI, 2010), we will cross-validate our results in a large representative sample.

Anthropologists have long noted that cultures differ in childcare arrangements (e.g., LeVine & New, 2008) and psychologists are increasingly studying the possible constraining of developmental trajectories by various (sub)cultures (e.g., Bronfenbrenner, 2005). One way to conceptualize this constraining process is to view parents from specific cultures or ethnic groups as creating a specific 'developmental niche' (Super & Harkness, 1986, 2002) with specific physical and social settings of daily life, specific customs of childcare, and a specific caretaker psychology. As to the latter aspect, parents may hold specific, cherished values, and parenting styles. Different developmental niches may lead to different developmental trajectories.

Little is known, however, about the way present-day Mapuche canalize child development. The Mapuche now live primarily in the Araucanía region, an impoverished rural area, where they represent almost 30 percent of the inhabitants and experience prejudice and discrimination from the mainstream culture (Dunbar, Saiz, Stela, & Saez, 2000). The Mapuche originally practiced polygamy and lived in a patrilocal extended family. Traditionally, older children were raised by all members of the patrilineal group, with an authority role for the paternal grandfather. Children were highly valued and the number of children per woman was high. Up to four years of age children were in the constant company of their mother, positioned on a cradle-board (kulpülwe), and could observe all her activities in the traditional hut (Caniguan, 2012). After that age, children gradually began participating in gender-segregated work activities (e.g., taking care of the cattle, cleaning the ruca). The Mapuche cosmovision and significant legends were transmitted within the family through story-telling in Mapudungun, the Mapuche language.

Unfortunately, the Mapuche underwent a process of suppression and marginalization and their traditional social structure has been eroded. Forced to live in less fertile areas, they could no longer sustain themselves by agriculture and many younger people emigrated to the city in search of labor, which undermined the traditional family ties and the transmission of the Mapuche culture (Caniguan, 2012). The number of single mothers has increased; both working and non-working single mothers mostly live with their parents, which means that the grandmother has become an important socializing agent and that the Mapuche culture is partly moving to a matrilocal and matrilinear system. Mapuche living in the city may still celebrate traditional festivities

and occasionally consult a Machi (medicine woman, who is in contact with the spirits), but in essence they have adopted much of the non-Mapuche culture. Mapuche in rural areas no longer live in rucas, no longer strive for large families, have accepted school as a socializing agent and many have adopted the Roman-Catholic or, more recently, the protestant Evangelical religion. Thus, in many respects, the Mapuche have become indistinguishable from the non-Mapuche of the same social class: in rural regions they live the life of poor peasants and in the city they perform simple manual work (Caniguan, 2012; Sadler & Obach, 2006).

Whether child rearing environments actually differ between ethnic groups has been studied in the US context by, for instance, Bradley, Corwyn, McAdoo and Coll (2001). They concluded that effects of poverty on the home environment are more pronounced than are the effects of a particular ethnicity. Other studies found that ethnic minority parents show less sensitive behavior than majority parents (Spiker, Ferguson, & Brooks-Gunn, 1993; Van IJzendoorn, 1990; Yaman, Mesman, Van IJzendoorn, Bakermans-Kranenburg, & Linting, 2010), but a recent review reported that these differences are most probably caused by socio-economic differences (Mesman, Van IJzendoorn, & Bakermans-Kranenburg, 2012). But although mother-child interactions across cultures seem similar, it is still possible that the interpretation of children's signals is subject to cultural beliefs and customs (Bornstein et al., 1992; Keller & Otto, 2009). Recently, it was investigated whether parents from different cultural backgrounds hold different beliefs about what constitutes sensitive parenting. It was shown that these views are highly similar in different cultures and societies, but are again fully mediated by family income (Emmen, et al., 2012; Mesman et al., 2013). Thus, available evidence suggests that differences in home environment, sensitive behavior, and beliefs about ideal parenting can be explained by socio-economic differences, at least within one society.

In sum, the focus of our research is whether Mapuche and non-Mapuche children experience different childcare environments, and, if such differences exist, to what extent these differences can be explained by ethnicity and/or socio-economic status. We hypothesize that, after correcting for socio-economic status, modern Mapuche parents provide a childcare environment to their children that is similar to that provided by non-Mapuche parents. In the MLCS , different indicators of the quality of the childcare environment are distinguished, including mothers' beliefs and attitudes about parenting, and the actual quality and quantity of support and stimulation for children provided at home. In the ELPI study, the MLCS results will be cross-validated in a large nationally representative sample of Mapuche and non-Mapuche families in Chile. The aim of the ELPI is to increase our knowledge of early childhood in Chile. Because the ELPI also measures ethnicity, income, and quality of the home environment, the ELPI data provide us with a unique opportunity to test whether the findings of the MLCS can be replicated in a large data set.

MLCS

Method

Participants

Participants were recruited from three public health centers and records of 19 public childcare centers in the Araucanía and Castro-Chiloé areas in Chile. Families were eligible if they had a child who was born between September 2011 and December 2011. Brochures with information about the study were distributed to all eligible families (n = 370). In total, 82 mothers were unreachable because the contact data were incorrect or had changed. After the first contact, 178 of the 288 mothers refused to participate, mainly because of time constraints. In the recruitment phase, self-reports on ethnicity were not available yet. Therefore, we estimated the percentage of Mapuche non-participants using their last name, which is a reliable predictor of ethnicity, showing a concordance rate of 95% with self-report in our sample. Based on last names we estimate that 30% of the non-participants were Mapuche, which is similar to the distribution of the participants.

Finally, 110 families (38%) confirmed their willingness to participate, and gave written consent for the home visits. The sample consisted of low to middle class indigenous Mapuche (n = 42) and non-Mapuche (n = 68) families. Mean age of the mothers was 25.38 years (SD = 7.24) and mean age of the infants was 6.41 months (SD = 1.55). Fifty-seven percent of the sample consisted of boys and 42% were raised by single mothers. The educational level of the mothers was distributed as follows: 6% did not attend school or did not complete primary school, 26% percent completed primary school or some years in secondary school, 57% finished secondary school, and 11% finished vocational or university studies. Most mothers (86%) reported to have a religion, of whom 43% reported to be Catholic, 38% were Evangelic and 5% had another religion (e.g., Jehovah's Witnesses, Mormons).

Procedure

All mothers were visited twice by two trained students (out of a pool of eight students following the fifth year of a Psychology undergraduate program). Mothers were fluent in Spanish and the students checked whether the mothers understood the instructions. During the first visit, the quality of the home environment was observed and the mothers filled out questionnaires about background variables and family characteristics (e.g., age, ethnicity, marital status). During the second visit, the maternal sensitivity beliefs interview was done and mothers filled out questionnaires concerning depression, self-efficacy, religion, and attitudes towards caregiving. Each visit took approximately two hours.

Instruments

Quality of home environment. The Infant/Toddler Home Observation for Measurement of the Environment (IT-HOME; Caldwell & Bradley, 2003) was

used to measure the quality and quantity of stimulation and support available to the child in the home environment. The IT-HOME is composed of 45 items, which can be scored as positive (1) or negative (0) based on 30 minutes of observation and a semi-structured interview afterwards. The binary-choice items are summed and provide a total score, which may range from 0 to 45, the latter showing the highest quality of the home environment. The HOME Inventory has demonstrated to be a valid instrument in the Chilean context (Bustos, Herrera, & Mathiesen, 2001) and in US minority groups (Bradley et al., 2001). As in other studies (e.g., Groeneveld, Vermeer, Van IJzendoorn, & Linting, 2011), internal consistency of the instrument was moderate, with a Cronbach's alpha of .58. However, the HOME aims at assessing potentially independent features of the environment and high internal consistency should not be expected (Bradley, Corwyn, & Whiteside-Mansell, 1996). Observations were done by the students who followed an elaborate training procedure (i.e., studying the manual, discussing items, video-observations, and three home visits). Inter-rater reliability was established to a criterion of 80% agreement with expert criteria scores.

Maternal sensitivity beliefs. Maternal sensitivity beliefs were measured with the Maternal Behavior Q-sort (MBQS; Pederson, Moran, & Bento, 1999). The MBQS was originally designed to observe maternal sensitivity and has now been used in minority groups from different countries (Mesman et al., 2013). It consists of 90 cards with descriptions of maternal behavior to measure mothers' ability to recognize their children's signals and to respond promptly and appropriately to them. The MBQ-sort comprises descriptions of childcare, maternal affect, attentiveness, interaction style and communication skills of the mother (Pederson et al., 1999). An example of a childcare description is: "Makes sure that there are toys that fit the age of her child". In this study, the MBQS was used to assess maternal sensitivity beliefs and mothers were asked to use the MBQS to describe the ideal mother. They sorted these 90 cards into 9 stacks from *least descriptive* (1) to *most descriptive* (9) of the ideal mother. In four cases the MBQS proved too difficult and the final scores were imputed taking into account the ethnicity and income of the mothers. The scores were derived by correlating the resulting profiles with the criterion sort provided by ten parenting experts. For details of the procedure see Emmen et al. (2012).

Attitude towards caregiving. Mothers were asked to fill out a questionnaire covering nine items regarding their attitude towards sensitive caregiving. The original questionnaire also covers items that measure attitudes towards sensitive discipline (Bakermans-Kranenburg & Van IJzendoorn, 2003), but for the purpose of this study only items measuring sensitive caregiving were included. One item was deleted because it affected the internal consistency of the scale. Item scores ranged from (1) *totally disagree* to (5) *totally agree*. An example of an item is "In my opinion, I should praise my children at least once a day". An overall score was computed by taking the mean (Cronbach's α = .70).

Religion in child rearing. A questionnaire of four items was administered to the mothers (Emmen, et al., 2012). Each item reflects the importance of religion as a guide for child rearing. On a 5-point Likert scale, mothers endorsed their agreement from (1) *totally disagree* to (5) *totally agree*. An example of an item is:

"My religion helps me to rear my child well". A total score was computed by summing items scores. The internal consistency of the scale was high (Cronbach's α = .93).

Parental self-efficacy. Parental self-efficacy was assessed using the Parental Evaluation Scale (EEP; Farkas, 2008), a self-administered measure to evaluate the self-efficacy feelings about motherhood in women with young children. The scale is composed by 10 items rated from 0 (*totally disagree*) to 10 (*totally agree*), and the final score is obtained by the sum scores divided by 10. Internal consistency of the scale was moderate (Cronbach's α = .67).

Maternal depressive symptoms. Depressive symptoms were measured using the six-item depression scale of the Spanish version of the Brief Symptom Inventory (BSI; Derogatis, 1993). These items define a spectrum of depressive symptoms experienced in the previous seven days such as "feeling worthless" and are rated on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). Total score was computed by dividing the raw score by the number of items. Internal consistency of the depression scale was adequate (Cronbach's α = .80). To make this variable more comparable with the corresponding variable from the ELPI study, we transformed it into a categorical variable using the clinical cutoff reported by Vilchinsky et al. (2010) (+2 *SD* to the normative mean).

Background variables

Ethnicity. The ethnicity of the family was determined by self-report (cf. Baumeister, Marchi, Pearl, Williams, & Braveman, 2000; Boehmer, et al., 2002). Families were defined as Mapuche when mothers stated in the interview that their children live in a Mapuche family.

Income. Mothers were asked for the monthly family income in Chilean Pesos (CLP) and the number of household members. This resulted in the following per capita categories: no income (1); less than $ 61.911 ($ 114 USD) (2); between $ 61.912 and $ 105.907 ($ 195 USD) (3); between $ 105.908 and $ 167.879 ($ 310 USD) (4); between $ 167.880 and $ 300.869 ($ 556 USD) (5); between $ 300.870 and $ 2.500.000 ($ 4.620 USD) (6); over $ 2.500.000 (7). The distribution of the classifications was based on the five quintiles from the Instituto Nacional de Estadísticas de Chile (National Institute of Chilean Statistics) and the last quintile was divided into two categories due its large range.

Maternal educational level. The level of maternal education was self-reported on a 1-5 point scale (1 = *no education or incomplete elementary*; 2 = *incomplete secondary school*; 3 = *secondary school*; 4 = *vocational education*; 5 = *university studies*).

Results

Similarities and Differences between Mapuche and non-Mapuche families

First, using t-tests we examined whether there were significant differences between the two ethnic groups on child rearing variables and demographics. As Table 1 shows, the groups did not differ on demographic background variables, except for income: Average monthly income was lower in the Mapuche families than in the non-Mapuche families (d = 0.56). Comparing the child rearing variables,

the quality of the home environment was significantly lower in Mapuche families than in non-Mapuche families (d = 0.55). The two ethnic groups did not only differ in global quality at home, but also in sensitivity belief score (d = 0.46): The views of non-Mapuche mothers were significantly more similar to the MBQS criterion sort than those of Mapuche mothers. No significant differences between the two groups were found in attitude towards caregiving, religion in childrearing, maternal self-efficacy, and maternal depressive symptoms (see Table 1).

Table 1.
Descriptive Statistics of Child Rearing and Demographic Background Variables in the MLCS

		Ethnicity[a]							
		Mapuche (N = 42)		non-Mapuche (N = 68)		Total (N = 110)			
		M	*SD*	*M*	*SD*	*M*	*SD*	*t* (df = 108)	*d*
Child rearing variables									
HOME global quality[b]		32.76	3.07	34.59	3.51	33.89	3.45	-2.78**	0.55
Sensitivity belief score		0.68	0.07	0.72	0.07	0.70	0.07	-2.32*	0.46
Attitude towards caregiving		3.65	0.44	3.64	0.65	3.64	0.58	0.11	0.02
Religion in child rearing		14.07	4.57	12.40	5.03	13.04	4.90	1.76	0.35
Maternal self-efficacy		7.94	1.33	7.82	1.52	7.87	1.44	0.43	0.08
Demographics									
Income[c]		2.29	0.77	2.88	1.28	2.65	1.15	-2.73**	0.56
Maternal education		2.79	0.84	2.82	0.91	2.81	0.88	-0.22	0.03
Maternal age (years)		26.15	7.68	24.90	6.97	25.38	7.24	0.88	0.17
Number of children		1.76	1.10	1.72	0.90	1.74	0.97	0.22	0.04
Child age (months)		6.05	1.40	6.63	1.60	6.41	1.55	-1.95	0.39
		N	%	*N*	%	*N*	%	χ^2	
Maternal depression	Yes	1	2.4	7	10.3	8	7.3	2.41	0.30
	No	41	97.6	61	89.7	102	92.7		
Child gender	Male	25	59.5	38	55.9	63	57.3	.14	0.07
	Female	17	40.5	30	44.1	47	42.7		
Marital status	Single	17	40.5	29	42.6	46	41.8	.05	0.04
	Couple	25	59.5	39	57.4	64	58.2		
Religion	Religious	37	88.1	57	83.8	94	85.5	.38	0.12
	Non-Religious	5	11.9	11	16.2	16	14.5		

Note. [a] Mapuche = 0, non-Mapuche = 1; [b] HOME includes 45 items; [c] Income on seven-points scale.
* p < .05. ** p < .01.

Table 2.
Correlations Between Child Rearing and Demographic Background Variables in the MLCS (N = 110)

		1	2	3	4	5	6	7	8	9	10	11	12	13
1	Ethnicity[a]	-												
2	HOME global quality	.26**	-											
3	Sensitivity belief score	.22*	.26**	-										
4	Attitude towards caregiving	-.01	.12	.22*	-									
5	Religion in child rearing	-.17	.05	-.13	.15	-								
6	Parental self-efficacy	-.04	.21*	.22*	.11	.02	-							
7	Maternal depression[b]	.15	-.04	-.14	-.04	-.05	-.36***	-						
8	Income	.25**	.33***	.06	-.02	-.02	-.03	.09	-					
9	Maternal education	.02	.25**	.04	-.01	-.05	.05	-.05	.27**	-				
10	Maternal age	-.09	-.02	-.17	.06	.26**	.01	.02	.12	.05	-			
11	Child age	.19	.16	-.01	.15	.03	-.08	.06	.01	.09	.06	-		
12	Child gender	.04	.09	-.10	-.09	-.06	-.08	-.03	.07	.04	-.03	-.18	-	
13	Marital status[c]	-.02	.02	-.26**	-.19	.19*	.02	.03	.16	.03	.32***	-.11	.14	-

Note. [a] Mapuche = 0, non-Mapuche = 1; [b] Numerical variable; [c] Marital status: single = 0, couple = 1 (married or unmarried).
*$p < .05$. ** $p < .01$. ***$p < .001$.

Associations between Ethnicity, Demographics, and Child Rearing

Bivariate correlations for all variables were calculated for the whole sample. As Table 2 shows, ethnicity was significantly associated with quality of the home environment, maternal sensitivity beliefs, and income. As we showed with t-tests, the scores of the Mapuche group were significantly lower on these variables than the scores of the non-Mapuche group. Additionally, the quality of the home environment was positively associated with maternal sensitivity beliefs, parental self-efficacy, income and maternal education. Mothers who have beliefs about maternal sensitivity closer to the experts' criteria, provide higher global quality of care in the home environment, feel more confident in their parental role, and have a higher income and educational level. Maternal sensitivity beliefs were negatively related with marital status. Mothers who have beliefs about maternal sensitivity closer to the experts' criteria were more likely to be single mothers. As for religion in child rearing, we found that older and married mothers were more inclined to use religion as a guide for child rearing (see Table 2).

Lastly, we tested which variables independently predicted the difference between the two ethnic groups (Mapuche versus non-Mapuche), using a hierarchical logistic regression analysis (bootstrapped). We use logistic regression to describe multivariate differences between the two ethnic groups efficiently, and not to explain those differences: the predictors in the regression should not be considered determinants but descriptors of the ethnic difference. Because of the small sample size and to have a more robust statistics (Wright, London, & Field, 2011), we used bootstrapping to estimate accurate standard errors and confidence intervals (see Table 3). We first entered the seven demographic variables, followed by maternal depression symptoms in the second block, self-efficacy in the third block, and finally a fourth block with four variables related to child rearing. After inclusion of the seven demographic predictors, there was a significant model fit, $\chi 2$ (7, N = 110) = 15.00, p = .036. After entering the predictors maternal depression symptoms, $\chi 2$ (8, N = 110) = 15.90, p = .044, and maternal self-efficacy, $\chi 2$ (9, N = 110) = 15.97, p = .068, the model fit did not improve. In the last step, the four child rearing variables were included, which improved the model fit, $\chi 2$ (13, N = 110) = 26.98, p = .013. Table 3 shows the results of the final model. Only the income variable contributed significantly as a predictor of ethnicity (B = 0.57, $p < .05$).

Table 3.
Differences Between Mapuche and non-Mapuche Families in the MLCS: Bootstrap (10,000) Logistic Regression-Analysis (N = 110)

			95% Confidence Intervals			
	B	Std. Error	Lower	Upper	Odds Ratio	*d*
Constant	-8.09	5.50	-22.59	-1.05		
Block 1						
Maternal age	-0.06	0.09	-0.29	0.08	0.94	-0.03
Income	0.57*	0.37	0.12	1.58	1.76	0.31
Maternal education	-0.17	0.44	-1.13	0.65	0.84	-0.09
Child age	0.32	0.23	0.01	0.93	1.38	0.18
Marital status	-0.34	0.76	-1.93	1.09	0.71	-0.19
Gender	-0.28	0.71	-1.92	0.93	0.76	-0.15
Number of children	0.34	0.67	-0.46	2.17	1.41	0.19
Block 2						
Maternal depression[a]	0.20	0.74	-1.14	1.78	1.22	0.11
Block 3						
Parental self-efficacy	-0.16	0.29	-0.84	0.32	0.85	-0.09
Block 4						
HOME	0.10	0.11	-0.07	0.36	1.11	0.06
MBQS	0.08	0.06	-0.00	0.23	1.08	0.04
Attitude	0.10	0.71	-1.32	1.54	1.11	0.06
Religion	-0.08	0.08	-0.28	0.02	0.92	-0.05

Note. [a] Dichotomized by clinical cutoff (no depression = 0, depression = 1)
*$p < .05$.

Discussion

Based on our findings in the MLCS , we may conclude that the Mapuche and non-Mapuche families do not offer a strongly divergent child rearing environment to the young children. At the univariate level, significant differences were found in the global quality for child development at home, maternal sensitivity beliefs, and income, but controlling for several background variables, no child rearing variables remained significant. The differences between the two ethnic groups were explained by income, which confirms the important role that socio-economic factors play in child rearing and parenting, a finding that is in accordance with other studies that investigated the relation between parenting and ethnicity (Bakermans-Kranenburg, Van IJzendoorn, & Kroonenberg, 2004; Casey, Wong, Stacks, Beeghly, & Barnett, 2013; Emmen et al., 2012; Mesman et al., 2012, 2013). This is a striking effect given that the participating families were from a restricted range of income groups.

Despite the fact that the global quality of the home environment, measured with the HOME (Caldwell & Bradley, 2003), was significantly different between the Mapuche and non-Mapuche group, Mapuche and non-Mapuche mothers showed levels of home environment quality that were similar to those found in previous studies conducted in Chile (Bustos, Herrera Mathiesen, 2001; Sanhueza, 2006). Because the reported study is the first one that used the MBQS in Chile, no comparison is possible with other Chilean samples. However, the results were highly similar to those reported in the Emmen et al. (2012) study, in which sensitivity beliefs of Turkish and Moroccan minorities and Dutch mothers from different socio-economic status in the Netherlands were compared. The mean MBQS score in the current study was around .70 (.68 for Mapuche and .72 for non-Mapuche) and the range found by Emmen et al. (2012) was from .70 to .78, which implies that Chilean mothers' beliefs about sensitivity are highly comparable to the views by experts and mothers from other cultures. This finding confirms the recent claim that across cultures the ideal mother is a sensitive one (Mesman et al., 2013).

Thus, our findings suggest that the developmental niche does not substantially differ between Mapuche and non-Mapuche families. The physical and social settings, as measured by the HOME, seem largely similar. The same holds for the caretaker psychology: Mapuche and non-Mapuche mothers have more or less the same ideas about maternal sensitivity, limit setting, and stimulation and support. The differences that do exist can be explained by differences in income. Above we suggested that differences between the two cultures may be small because the Mapuche have adopted elements of the dominant culture. Another possibility is that the Mapuche still hold different beliefs but that these do not translate into different childcare arrangements.

Strengths and limitations

This brings us to the strengths and possible limitations of the MLCS . A strong point is that various instruments (e.g., HOME, MBQS) were used to measure factors that are potentially relevant for child rearing. This allowed us to examine

convergence of the relevant differences between Mapuche and non-Mapuche across various measures and domains. A possible limitation is, first, that the instruments used, although they have been widely applied in cross-cultural research and validated in Chilean samples, do not measure some important differences in childcare between the Mapuche and non-Mapuche culture. Second, it is conceivable that – due to our recruitment procedure and the low response rate – our sample is not representative for the Mapuche at large. It is possible, for instance, that there is group of more traditional Mapuche who do not make use of public services and offer a different childcare environment. With our recruitment procedure (through public health and childcare centers) we could not reach such a group.

For all practical purposes, however, the present findings do not invalidate policy makers and practitioners approaching Mapuche and non-Mapuche families in similar ways at least when it concerns such important aspects of childrearing as the quality of the home environment and beliefs about maternal sensitivity. Interventions to promote sensitive parenting may use similar approaches for minority and majority parents, at least for groups within the same country or context because Mapuche and non-Mapuche parents seem to aim at the same type of sensitive interactions (Emmen et al., 2012). The current program Chile Grows With You justifiably tries to take the differences between the various ethnic groups in Chile into account, addressing them in terms of their accepted belief system. However, the present findings suggest that different belief systems –if present– may result in similar childcare arrangements.

ELPI study

Method

Participants

We focus on the ELPI data available from the first time point, collected in 2010 and involving a large and representative sample of 15,175 children (a 67% response rate) and their families. Since our main goal is to compare the Mapuche group with the non-Mapuche group, we compared data concerning children who belong to the Mapuche ethnic minority group (n = 1050; 7%) with data from children belonging to the majority group in Chile (n = 13,856; 91%). Mean age of all mothers was 29.25 years (SD = 7.06) and mean age of the infants was 30.38 months (SD = 12.77; range from 7 to 56 months). Fifty-one percent of the sample consisted of boys and 29% were raised by single mothers. The educational level of the mothers was distributed as follows: 0.5% did not attend school or did not complete primary school, 17.5% percent completed primary school or some years in secondary school, 64% finished secondary school, and 18% finished vocational or university studies. No data are available with respect to religion.

Procedure

The first time point of the ELPI study consisted of two visits. During the first visit, the interviewers (n = 467; 78% female) introduced the study through a letter

which explained the study, highlighting its importance for the development of new public policies and clarifying the anonymity and voluntary participation. Interviewers tried to engage the participants, collected demographic data and arranged the second visit. The interviewers were between 17 – 55 years old and had at least completed their secondary studies. Sixty-five percent had experience in a similar type of survey. Interviewers received a training of 5 hours explaining the goal of the study, details of the survey, and focusing on the standardization of the procedures. The second visit was conducted by 326 observers (85% female) between 17 – 54 years old, and all of them with a higher education in the social sciences, mostly psychology, who were also trained for this purpose. The goal of the second visit was to measure physical, cognitive and socio-emotional variables in both child and caregiver. The evaluations were completed for 91.6% of the families interviewed during the first visit. The data collection took part from April to September 2010; all the surveys were double-checked by supervisors, and 10% of the interviews were also supervised to ensure high quality of the process and the data.

Instruments

Quality of home environment. As in the MLCS , home quality was measured with the HOME. However, a restricted number of items (32) were chosen, including only those items that can be observed during the interview. All items were similar to the corresponding items in the HOME version used in the MLCS covering the same subscales. Internal consistency of the instrument was acceptable, with a Cronbach's alpha of .77.

Post-partum depression. Mothers were asked whether they were diagnosed with post-partum depression (yes/no).

Background variables

Ethnicity. The ethnicity of the family was defined by self-report. Families were defined as belonging to a minority (e.g., Mapuche) when the mother and/or principal caregiver stated in the interview that they belonged to a minority.

Income. Mothers or main caregivers were asked for the monthly family income in Chilean Pesos (CLP). This resulted in the following 10 categories: less than $ 64.000 ($ 118 USD) (1); between $ 64.000 and $ 132.000 ($ 244 USD) (2); between $ 132.000 and $ 250.000 ($ 462 USD) (3); between $ 250.000 and $ 350.000 ($ 647 USD) (4); between $ 350.000 and $ 450.000 ($ 832 USD) (5); between $ 450.000 and $ 650.000 ($ 1.201 USD) (6); between $ 650.000 and $ 850.000 ($ 1.571 USD) (7); between $ 850.000 and $ 1.050.000 ($ 1.940 USD) (8); between $ 1.050.000 and $ 1.250.000 ($ 2.310 USD) (9); more than $ 1.250.000 (10).

Maternal educational level. The level of maternal education was self-reported using 19 categories ranging from no education to postgraduate. For the purposes of comparison with the MLCS, we transformed these categories into a 5-point scale (1 = *no education or incomplete elementary*; 2 = *incomplete secondary school*; 3 = *secondary school*; 4 = *vocational education*; 5 = *university studies*).

Table 4.
Descriptive Statistics of Child Rearing and Demographic Background Variables in the ELPI study (Prior to imputation of missing data)

		Ethnicity[a]										
		Mapuche			non-Mapuche			Total				
		N	*M*	*SD*	*N*	*M*	*SD*	*M*	*SD*	*t*	*df*	*d*
Child rearing variables												
HOME global quality[b]		989	22.57	4.57	12648	24.41	4.24	24.28	4.29	12.30***	13635	0.41
Demographics												
Income[c]		1004	3.86	1.87	13214	4.67	2.25	4.61	2.23	12.98***	14216	0.43
Maternal education		1044	2.80	0.67	13722	3.09	0.75	3.07	0.75	12.05***	14764	0.41
Maternal age (years)		1038	29.22	7.35	13697	29.25	7.04	29.25	7.06	0.14	14733	0.00
Child age (months)		990	30.40	12.72	12661	30.38	12.78	30.38	12.77	0.04	13649	0.00
		N	%		*N*	%		*N*	%	χ^2		
Depression (post-partum)	Yes	119	11.5		1873	13.8		1992	13.6	4.02*		0.03
	No	913	88.5		11748	86.2		12661	86.4			
Child gender	Male	519	49.4		7023	50.7		7542	50.6	0.62		0.01
	Female	531	50.6		6833	49.3		7364	49.4			
Marital status	Single	278	26.8		4026	29.4		4304	29.2	3.18†		0.03
	Couple	760	73.2		9671	70.6		10431	70.8			

Note. [a] Mapuche = 0, non-Mapuche = 1; [b] HOME includes 32 items; [c] Income on ten-points scale.
†$p < .10$. *$p < .05$. *** $p < .001$.

Results

Similarities and Differences between Mapuche and non-Mapuche families

Table 4 shows, consistent with the results of the MLCS, that the quality of the home environment was significantly lower in Mapuche families than in non-Mapuche families (d = 0.41) and that the average monthly income was lower in the Mapuche families than in the non-Mapuche families (d = 0.43). In addition, educational level of Mapuche mothers was significantly lower than that of non-Mapuche mothers (d = 0.41) and Mapuche mothers reported less post-partum depressive symptoms than non-Mapuche mothers ($\chi2$ = 4.02, $p < .05$).Global quality at home, income, and maternal education were standardized to elucidate the differences between the Mapuche and non-Mapuche groups and to facilitate the comparison with the results of the MLCS. As Figure 1 shows, global quality at home, income, and maternal education were significantly lower for the Mapuche group than for the non-Mapuche group. Except for maternal education, these results confirm the results found in the MLCS.

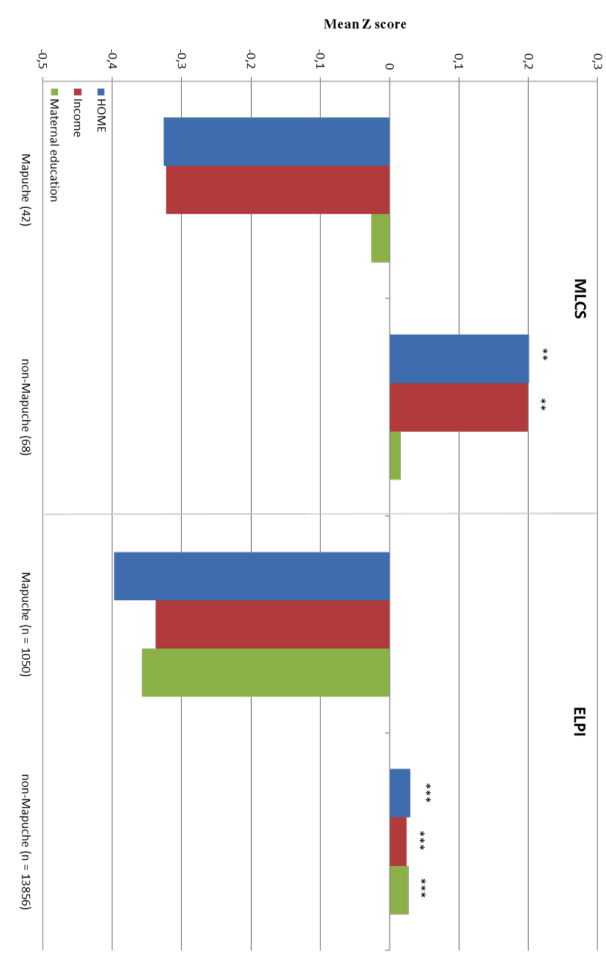

Figure 1. Standardized differences in HOME global quality, income and maternal education between Mapuche and non-Mapuche families in the MLCS and the ELPI study.
**$p < .01$. ***$p < .001$.

Table 5.
Correlations Between Child Rearing and Demographic Background Variables in the ELPI study (Prior and after (N = 14,906) imputation of missing data)

		1	2	3	4	5	6	7	8	9
1	Ethnicity[a]	-	.11***	.02*	.09***	.10***	.00	.00	-.01	-.02
2	HOME global quality	.11***	-	.01	.25***	.30***	.07***	-.01	.02	.09***
3	Maternal depression[b]	.02*	.00	-	-.01	.01	.02	-.09***	.00	-.02**
4	Income	.09***	.25***	-.00	-	.47***	.10***	-.01	-.00	.11***
5	Maternal education	.10***	.30***	.01	.47***	-	.07***	-.02*	.00	.00
6	Maternal age	.00	.07***	.02	.10***	.07***	-	.17***	.01	.27***
7	Child age	.00	-.01	-.09***	-.00	-.02*	.17***	-	.01	.02*
8	Child gender	-.01	.02	.00	-.00	.00	.01	.01	-	.02*
9	Marital status[c]	-.02	.09***	-.02**	.11***	.01	.27***	.02*	.02*	-

Note. [a] Mapuche = 0, non-Mapuche = 1; [b] Post-partum depression: No = 0, Yes = 1; [c] Marital status: single = 0, couple = 1 (married or unmarried).
*$p < .05$. ** $p < .01$. ***$p < .001$.

Table 6.
Differences Between Mapuche and non-Mapuche Families in the ELPI Study: Logistic Regression-Analysis (N = 14,906)

			95% Confidence Intervals			
	B	Std. Error	Lower	Upper	Odds Ratio	*d*
Constant	-0.45	0.27	0.38	1.08	0.64	
Block 1						
Maternal age	-0.00	0.01	0.99	1.01	0.99	-0.00
Income	0.12***	0.02	1.08	1.17	1.12	0.06
Maternal education	0.31***	0.06	1.22	1.52	1.36	0.17
Child age	0.02	0.03	0.99	1.01	1.00	0.01
Marital status	0.22**	0.08	1.07	1.44	1.24	0.12
Gender	-0.05	0.07	0.84	1.08	0.95	-0.03
Block 2						
Maternal depression[a]	0.20*	0.10	1.00	1.50	1.23	0.10
Block 3						
HOME	0.07***	0.01	1.05	1.08	1.07	0.04

Note. [a] Post-partum depression: No = 0, Yes = 1.
**$p < .01$. ***$p < .001$.

Associations between Ethnicity, Demographics, and Child Rearing
Percentages of missing data ranged between 0.9% for maternal education to 8.5% for HOME global quality. To obtain a complete dataset prior to the analyses, multiple imputation was performed (ten iterations) (Van Buuren, 2007; Goldstein & Woodhouse, 1996) including all available variables in the data set using predictive mean matching to impute missing data (Little, 1988; Rubin, 1986). Finally, the pooled imputed dataset (N = 14,906) was used for subsequent analysis. Bivariate correlations for all variables were calculated prior and after multiple imputation for the whole sample. As Table 5 shows, ethnicity was significantly associated with quality of the home environment and maternal education. Likewise, ethnicity was modestly associated with income and maternal depression. As we showed with t-tests, the scores of the Mapuche group were significantly lower on these variables than the scores of the non-Mapuche group. Additionally, the quality of the home environment was positively associated with income and maternal education and, to a lesser extent, with maternal age and marital status. There is a small negative association between maternal depression, child age, and marital status. In addition, income was strongly correlated with maternal education and less strongly but still significantly with maternal age and marital status. These results remain the same before and after multiple imputation (see Table 5).

Lastly, we tested which variables independently predicted the difference between the two ethnic groups (Mapuche versus non-Mapuche), using a hierarchical logistic regression analysis. We first entered the six demographic variables, followed by maternal depression symptoms in the second block, and finally a third block including home quality. After inclusion of the six demographic predictors, there was a significant model fit, $\chi 2$ (6, N = 14,906) = 220.71, p = .001. After entering the predictor maternal depression symptoms, $\chi 2$ (7, N = 14,906) = 223.75, p = 001, the model fit did not improve. In the last step, home quality was included, which improved the model fit, $\chi 2$ (8, N = 14,906) = 300.75, p = .001. Table 6 shows the results of the final model. Income, maternal education, marital status, maternal depression symptoms and home quality contributed significantly as predictors of ethnicity. After correcting for demographics, home quality remained a significant predictor, but the effect size was small (d = 0.04).

Discussion

The findings of the ELPI study show that there are only very small differences in quality of childcare environment between Mapuche and non-Mapuche families. At the univariate level, the ELPI study shows that Mapuche families live in less advantageous conditions, with significantly lower incomes, and lower maternal education than in the non-Mapuche group, which may in its turn result in lower global quality of the home environment for child development. Other studies have shown that maternal education and income are strongly correlated with positive parenting (e.g., Bakermans-Kranenburg et al., 2004; Yaman et al., 2010) child well-being, less stress in the family environment, and better results in several areas of child development (Duncan & Brooks-Gunn, 1997). This implies

that ethnic background may cause a cascade of developments that ultimately result in trajectories of unequal development in the Chilean society.

Strengths and limitations.
The ELPI study has several strong features. First, the large and representative sample provides an invaluable opportunity to increase our knowledge about childrearing and the trajectory of the first years of life in the Chilean population. Second, the ELPI data set allowed us to provide the first nationwide comparison between Mapuche and non-Mapuche families in terms of child rearing. Its results are potentially relevant for current and future public policies concerning child well-being in Chile. A limitation of the ELPI study in this context is that it used just one instrument (i.e., HOME) to measure aspects of childcare environment. Also, just like in the MLCS, this instrument may not be sensitive enough to measure subtle Mapuche non-Mapuche differences in childcare, despite the fact that it has been used successfully in minority groups and different contexts before (Bradley et al., 2001). Nevertheless, the strong correlation of quality of home environment with family income shows that socioeconomic status matters.

General discussion

The results of both the MLCS and the ELPI study support our hypothesis that Mapuche and non-Mapuche parents do not provide substantially different child rearing environments for their children. Although in the ELPI study quality of care remained a significant predictor of ethnicity, after correcting for demographics, the marginal effect size (d = .04) makes these results comparable with what we found in the MLCS. The significance of the differences is explained by the large sample size in the ELPI study.

We can only speculate on the causes of the marginal differences in child rearing between Mapuche and non-Mapuche families. As Sadler and Obach (2006) have reported in a qualitative study, Mapuche mothers are receptive to advice and practices from the non-Mapuche Chilean society, especially in the new generation. School entrance for Mapuche children at an early age, mixed marriages of Mapuche women with non-Mapuche men, and the increasing participation of Mapuche mothers in the labor-market may play a role as well (Sadler & Obach, 2006). According to Blanco and Meneses (2011), the academic level of the indigenous population in Chile is not significantly different from that of the non-indigenous population when they finish secondary school. However, lower SAT scores and lower social expectations result in less participation at a higher educational level, which in turn lead to differences that may determine the quality of future employment, salary, and opportunities for the new generation. On average the indigenous students are poorer than non-indigenous students and education does not eliminate this disadvantage, which is transmitted to the new generation (Blanco & Meneses, 2011). The two studies reported here show, in its turn, that socioeconomic disadvantage results in a poorer childcare environment.

Strengths and limitations
The MLCS used various indicators and instruments to measure the quality of the childcare environment but the size and representativeness of its sample may be a cause of concern. The ELPI study provides just one instrument to measure the quality childcare environment but the sample is large and representative. In this respect, the two studies complement each other. For both studies, the instruments used limit the conclusions to be drawn. However, we were able to cross-validate the results of the MLCS using data from the ELPI study, which provided a unique opportunity to compare the findings from a restricted number of families and a limited variation of SES with findings from a larger family data set with more variation in SES groups. Comparing the two studies, we found that effect sizes of the child rearing variables were largely similar, which supports our hypothesis that nowadays Mapuche and non-Mapuche families might offer a similar quality of the child rearing environment, if the economic and educational circumstances were less divergent. Results from the MLCS suggest that the Mapuche culture may be changing its traditions towards a pattern of child rearing that is rather similar to that in the non-Mapuche society.

The current Chilean program '*Chile Grows With You'* addresses ethnic differences, providing different guidelines for pregnancy and early childcare. However, based on the current studies, probably the best service this program offers is the free and universal coverage of childcare, which allows young mothers to participate in the labor market or continue their studies. This may eventually help breaking the poverty circle and decreasing the disadvantages transferred from one generation to the next in the first few years of the child's life. Preserving cultural differences and traditions is an important goal in itself but for childcare it seems equally important to eliminate socioeconomic inequality.

5 Breaking the cycle of poverty? Early childcare, socio-economic status and ethnicity in Chile

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Abstract

Two longitudinal studies are reported examining the long-term effects of full-time daycare in Mapuche and non-Mapuche families in Chile. The first study, the Magellan-Leiden Childcare Study (MLCS), used a sample of 95 mothers with children younger than one year old (n = 36 in daycare). In the second study, we cross-validated our results in a large and representative sample of 10723 mothers and their children (n = 2922 in early daycare; n = 6464 in late daycare) from the Chilean Encuesta Longitudinal de la Primera Infancia (ELPI). In both studies, the quality of care for children provided at home was measured with the Home Observation for Measurement of the Environment (HOME). In the MLCS study, additional indicators of the mother-child relationship were measured.

Contrary to expectations, daycare did not negatively affect the mother-child relationship as compared to maternal care nor did it have an effect on the quality of the home environment. Using data from the ELPI, we were able to confirm the result that type of care does not differentially affect quality of the home environment. That this quality seems to decrease over the first years of life is a phenomenon that remains to be explained.

Keywords: childcare; attachment, maternal sensitivity; quality of care; ethnicity; inequality.

Introduction

The first Bachelet administration (2006-2009) introduced the public program *Chile Crece Contigo* (*Chile Grows With You*) to improve the quality of life of young children and their mothers. An elaborate system of regular health checks, information and help during pregnancy and after delivery to improve maternal care and child wellbeing was set up in well baby clinics and hospitals. This program has been recognized as an important means to reach a system of child health care comparable to that of developed countries. *Chile Grows With You* also introduced free access to full-time daycare from birth up to 4 years of age for children of the 40% financially most vulnerable families. Free daycare attendance

for the lower SES groups is viewed as a double protection: on the one hand, it is believed that young children will benefit from daycare both cognitively and socio-emotionally; on the other hand, parents of children attending daycare can enter the labor market and/or improve their education and training. Parents are also expected to regularly attend workshops about parenting organized by the daycare centers and to actively participate in the planning and organization of learning activities for their children (JUNJI, n.d.). Parents could thus in the short or long run earn a higher family income and possibly acquire better parenting skills. Taken together, these possible effects could break the cycle of poverty, which implies that poor and unemployed parents who otherwise would not be able to provide the right education for their offspring who in their turn would grow up poor, now will be empowered to break out of this vicious cycle.

The government policy to promote female labor force participation and daycare attendance has not yet proved effective (Medrano, 2009). Currently, about 43 percent of Chilean women have entered the labor market and the number of public daycare centers for children under two years of age grew more than fivefold between 2006 and 2009 (Chile Crece Contigo, n.d.). As a result, in 2009 approximately 37.4 percent of the preschoolers received non-maternal care and most of them full-time (Medrano, 2009).

However, both child experts and lay persons in Chile have questioned this new government policy, in particular, because infants can enter daycare centers at a very tender age and because daycare can be attended fulltime (i.e., 40 or more hours per week). Among other things, it is feared that the mother-infant attachment relationship will suffer from full-time daycare if infants enter daycare at a very young age. To the best of our knowledge, only one study in Chile compared the quality of the mother-child interaction for children attending daycare versus children receiving maternal care exclusively. Olhaberry (2011) reported that children in daycare did not experience different quality of interaction with the mother compared to children receiving maternal care exclusively. However, a significant association between age of entry and quality of the mother-child interaction was reported within the daycare group. Children who entered a daycare center before six months old experienced lower quality of interaction than others who entered later (Olhaberry, 2011).

Studies on quality of childcare have been conducted principally in North America and Europe and generally have shown benefits of good-quality care and risks of high-quantity and/or poor-quality care (e.g., Burchinal, Cryer, Clifford, & Howes, 2002; NICHD, 2002; Vandell et al., 2010). Full-time daycare may be physiologically stressful for children (Gunnar, Talge, & Herrera, 2009; Vermeer & Van IJzendoorn, 2006) and a history of extensive daycare during the first years predicts externalizing behavior, even until the age of 15 (Vandell et al., 2010). The NICHD Early Childcare Research Network (1997) found no significant main effect for daycare attendance on the attachment relationship with the mother, but reported specific conditions under which daycare features are linked to attachment and subsequent developmental outcomes. At the age of 15 months, infants were less likely to be securely attached to their mother when low maternal sensitivity was combined with either one of the following conditions: poor

quality of daycare, high quantity of daycare (more than 10 hours per week), or variability of daycare (more than one daycare arrangement) (for an overview, see Friedman & Boyle, 2008).

It is unclear whether findings from the large-scale NICHD study can be generalized to the Chilean daycare context but there are some causes for concern. First, the Chilean government promotes high-quantity daycare and many Chilean infants spend 40 or more hours in daycare. Second, the Chilean policy is to offer free daycare for the children of the lower SES families. However, it has been found that children from lower SES families on average receive less sensitive care at home (Mesman, Van IJzendoorn, & Bakermans-Kranenburg, 2012). Thus, the Chilean policy may result in a combination (low maternal sensitivity and high-quantity daycare) that proved detrimental to mother-child attachment in the NICHD study.

For these reasons, we hypothesize that children from low SES families, who enter daycare early and on a full-time basis, after one year of daycare will have a less adequate attachment relationship with their mother than those who received maternal care at home. On the other hand, we hypothesize that attending daycare may result in a better quality of the home environment. Parents of children attending daycare may use knowledge acquired during workshops (e.g. about parenting) and while attending daycare centers (e.g., concerning toys or cleanliness) in the home.

The main focus of our research is thus whether children who attend daycare centers full-time during the first year of life experience changes in their relationship with the mother and in the quality of the home environment. In a first study, the Magellan-Leiden Childcare Study (MLCS), indicators of the quality of the mother-child interaction and the home environment are distinguished, including attachment behavior, maternal sensitivity and the quality and quantity of support and stimulation for children provided at home (home quality). These indicators were measured just before the start of daycare and at the end of the child's first year of life. In the second study, using data from the Chilean Encuesta Longitudinal de la Primera Infancia (ELPI, 2010), we cross-validate part of our results in a large, nationally representative sample.

MLCS

Method

Participants

Families from three public health centers and 19 public childcare centers in the Araucanía and Castro-Chiloé areas in Chile were invited to participate in this study. Participants were eligible if they had a child younger than one year who had, at the start of the study, no daycare experience yet. All eligible families (n = 370) received a brochure which explained the study. After a visit by one of the researchers explaining the study, 110 families (38%) confirmed their willingness to participate, and gave written consent for the home interview and recording videos of mother-infant interactions. At Time 1, 51 mothers (46%) registered

for public daycare with the intention to have their child enter daycare in the following month; the other mothers (n = 59; 54%) declared their intention to provide maternal care exclusively at least for the first year after birth.

Before the Time 2 assessment, fifteen families dropped out of the study. Compared with mothers who completed the two observations, those who dropped out before Time 2 had a lower income, were of a younger age, and more often had a single mother status. Between Time 1 and Time 2, 12 mothers who initially chose for daycare eventually decided to provide maternal care exclusively, whereas six mothers switched from maternal care to daycare. In the reported study, only those children were included in the daycare group who actually attended daycare in the first year of life.

The sample who completed the two observations (n = 95) consisted of low to middle class indigenous Mapuche (n = 39; 41%) and non-Mapuche (n = 56; 59%) families. The mean age of the infants was 6.40 months (SD = 1.58) at Time 1 and 14.85 months (SD = 1.36) at Time 2. Fifty-eight percent of the sample consisted of boys and 38% were raised by single mothers. The educational level of the mothers was distributed as follows: 6% did not attend school or did not complete primary school, 23% percent completed primary school or some years in secondary school, 58% finished secondary school, and 13% finished vocational or university studies. Most mothers (85%) reported to have a religion, of whom 41% reported to be Catholic, 39% were Evangelic and 5% had another religion (e.g., Jehovah's Witnesses, Mormons). As for childcare arrangement, 36 children (38%) attended fulltime daycare center (M = 37.66, SD = 5.84, hours/week) and 59 children (62%) received maternal care exclusively. Means and standard deviations for demographics are displayed in Table 1 for the total group and subgroups separately. Children who received maternal care exclusively were significantly younger than those who attended daycare centers (t = 3.48, df = 93, p < .001). There were no significant differences between these two groups in any other demographic variable (see Table 1).

Instruments

Attachment behavior and maternal sensitivity. The Attachment During Stress scale (ADS; Massie & Campbell, 1992) was used to measure maternal sensitivity and infant attachment behavior towards the mother. The ADS is a one-page coding system of standardized observation of mother-infant behavior composed of two separate subscales: one for infant behavior and one for mother behavior. It can be used in mildly stressful situations, such as a pediatrician's consult, but also during naturally occurring activities like dressing, feeding, and ending bathing (Massie & Campbell, 1992). In a validation study it was shown that the ADS is a reasonably valid instrument able to distinguish between insecurely and securely attached infants, and that it also captures aspects of maternal sensitivity (Cárcamo, Van IJzendoorn, Vermeer, & Van der Veer, 2013).

Both subscales share the same contents, scoring system, and procedure. Each subscale contains seven typical attachment behaviors: gazing, vocalizing, touching (infant clinging), touching (resisting contact), holding, affect, and proximity. These seven behaviors are scored on a scale from 1 to 5, where scores

1 and 2 indicate less contact and avoidant behavior, scores 3 and 4 represent the use of the attachment figure as a secure base (for the mother subscale: sensitive behavior), and score 5 represents overanxious behavior or an unusually strong reaction to stress (for the mother subscale: an unusually strong reaction to stress of the child). Trained students who conducted the visits, recorded three types of mother-child interaction (change diaper, free play and feeding) at home at both time points. The video-recordings were coded afterwards by four coders who were trained to reliability of either the infant subscale or the mother subscale, and who also participated in the validation of the scale (Cárcamo et al., 2013). The observers independently coded mother and child behavior; coders who coded infant behavior did not code mother behavior for the same mother-infant pair and vice versa.

For our purposes and statistical analysis, we did not use the scores for *touching (b)* and *holding* behaviors, since those behaviors are for the most part dependent of the behavior displayed by the other part of the dyad. As a consequence, these behaviors were often not observed and therefore excluded from the analysis. We calculated a single score of attachment security and maternal sensitivity independently for infant and mother, based on the frequencies of the secure scores (scores 3 and 4) obtained in each of the five behaviors displayed. Thus, infant and mother independently got a score between 0 – 5. For the infant subscale, 0 represents no secure attachment behavior displayed and 5 means that all the behaviors were scored as typically seen in a securely attached child. For the mother subscale, 0 represents no sensitive behavior displayed to regulate the child's stress and 5 means that all the behaviors displayed were sensitive in regulating the stress of the child. To establish inter-rater reliability, we used a separate set of video-recordings from another Chilean study (Cárcamo, Lagos & Gómez, 2013). The four observers independently coded infant behavior (n = 15) in a reliable way, reaching a *Fleiss Kappa* = .63, and mother behavior from 15 different mother-infant dyads were coded with a *Fleiss Kappa* = .77.

Quality of the home environment. The Infant/Toddler Home Observation for Measurement of the Environment (IT-HOME; Caldwell & Bradley, 2003) was used to measure the quality and quantity of stimulation and support available to the child in the home environment. The IT-HOME is composed of 45 items, which can be scored as positive (1) or negative (0) based on 30 minutes of observation and a semi-structured interview afterwards. The binary-choice items are summed and provide a total score, which may range from 0 to 45, the latter showing the highest quality of the home environment. The HOME Inventory has demonstrated to be a valid instrument in the Chilean context (Bustos, Herrera, & Mathiesen, 2001) and in US minority groups (Bradley, Corwyn, McAdoo, & Coll, 2001). Internal consistency of the instrument was moderate at Time 1, with a Cronbach's alpha of .58, and good at Time 2 (α = .71). However, the HOME aims at assessing potentially independent features of the environment and high internal consistency should not be expected (Bradley, Corwyn, & Whiteside-Mansell, 1996). Observations were done by eight students in the fifth year of a Psychology undergraduate program, who followed an elaborate training procedure (i.e., studying the manual, discussing items, video-observations, and three home

visits). Inter-rater reliability was established to a criterion of 80% agreement with expert criteria scores during the training procedure. Observations at each time point were done by different observers. For the purpose of this study, IT-HOME mean scores will be reported, that are obtained by dividing the number of items that are scored positively by the total number of items of the scale (45).

Ethnicity. The ethnicity of the family was determined by self-report (cf. Baumeister, Marchi, Pearl, Williams, & Braveman, 2000; Boehmer, et al., 2002). Families were defined as Mapuche when mothers stated in the interview that their children live in a Mapuche family.

Income. Mothers were asked for the monthly family income in Chilean Pesos (CLP) and the number of household members. This resulted in the following per capita categories: no income (1); less than $ 61.911 ($ 114 USD) (2); between $ 61.912 and $ 105.907 ($ 195 USD) (3); between $ 105.908 and $ 167.879 ($ 310 USD) (4); between $ 167.880 and $ 300.869 ($ 556 USD) (5); between $ 300.870 and $ 2.500.000 ($ 4.620 USD) (6); over $ 2.500.000 (7). The distribution of the classifications was based on the five quintiles from the Instituto Nacional de Estadísticas de Chile (National Institute of Chilean Statistics) and the last quintile was divided into two categories due its large range.

Maternal educational level. The level of maternal education was self-reported on a 1-5 point scale (1 = *no education or incomplete elementary*; 2 = *incomplete secondary school*; 3 = *secondary school*; 4 = *vocational education*; 5 = *university studies*).

Procedure

Families were visited twice by different students at each time point. Time 1 observations took place just before children started daycare and Time 2 observations were scheduled approximately eight months later. Each time point consisted of two visits, taking approximately two hours each. During the first visit the IT-HOME was administered and mothers were asked to fill out the questionnaires concerning background information and self-report scales. The second visit consisted of video-recordings during three standard episodes of mother-infant interaction (changing diaper, free play and feeding the baby). At both time points, the same procedures and measures were used.

Results

Similarities and Differences in Background Variables dependent on Type of Care and Ethnicity

Firstly, using one-way ANOVAs we examined whether there were significant differences in background variables distinguishing Type of care (Maternal care versus Daycare) and Ethnicity (Mapuche versus non-Mapuche). The ANOVAs showed that there were overall significant effects for income (F [3, 91] = 3.88, p = .012, η^2 = .11) and child age (F [3, 91] = 6.18, p = .001, η^2 = .17). Post hoc tests showed that the Mapuche maternal care group (M = 2.23, SD = 0.86) had a significantly lower income than the non-Mapuche daycare group (M = 3.22, SD = 1.31). The other groups did not differ significantly on income. As for child age, post hoc test showed that children in both the Mapuche (M = 5.88, SD = 1.51) and non-

Mapuche group (M = 6.06, SD = 1.25) receiving maternal care were significantly younger than children in the non-Mapuche daycare group (M = 7.52, SD = 1.76). To test for group differences in dichotomous background variables, chi-square analyses were performed. No significant differences between groups were found for child gender and marital status (see Table 1).

Associations between Demographics, Attachment, Maternal Sensitivity and Quality of the Home Environment.

Bivariate correlations were calculated to inspect which variables were significantly associated with each other. For analysis purposes, the most relevant associations are discussed. Type of care was negatively associated with child age (r = -.34, p < .001), and positively correlated with ADS mother sensitivity at Time 1 (r = .31, p < .01), which means that children receiving daycare were older and had more sensitive mothers at Time 1 than children receiving maternal care. Ethnicity was significantly associated with income (r = .25, p < .01), quality of the home environment at Time 1 (r = .26, p < .01), and infant attachment behavior at Time 1 (r = .24, p < .05). Non-Mapuche families had a higher income, provided higher quality of care, and their children displayed more secure attachment behavior than those from Mapuche families at Time 1.

Quality of the home environment was positively correlated between Time 1 and Time 2 (r = .43, p < .001). Additionally, infant attachment behavior and ADS mother sensitivity measured at Time 2 were positively associated with maternal education level (r = .20, p < .05, and r = .27, p < .01 respectively). Finally, ADS mother sensitivity at Time 2 showed a positive correlation with quality of the home environment at Time 2 (r = .25, p < .05), infant attachment behavior at Time 1 (r = .25, p < .05), infant attachment behavior at Time 2 (r = .36, p < .001), and ADS mother sensitivity at Time 1 (r = .26, p < .05), all in the expected direction (see Table 2).

Table 1.
Descriptive Statistics of Demographic Background Variables in the MLCS at Time 1

		Maternal care			Daycare				
		Mapuche $N = 26$	non-Mapuche $N = 33$	Total $N = 59$	Mapuche $N = 13$	non-Mapuche $N = 23$	Total $N = 36$		
Demographics background		*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*F*	η^2
Income		2.23 (0.86)[a]	2.97 (1.31)	2.64 (1.19)	2.46 (0.52)	3.22 (1.31)[b]	2.94 (1.15)	3.88*	0.11
Maternal education		2.77 (0.95)	2.94 (1.09)	2.86 (1.03)	2.77 (0.73)	2.87 (0.76)	2.83 (0.74)	0.20	0.00
Maternal age (years)		27.17 (6.91)	25.27 (7.26)	26.11 (7.11)	26.08 (9.04)	26.70 (7.30)	26.47 (7.85)	0.35	0.01
Child age (months)		5.88 (1.51)[c]	6.06 (1.25)[c]	5.98 (1.36)	6.31 (1.32)	7.52 (1.76)[d]	7.08 (1.70)	6.18***	0.17
		N (%)	*N* (%)	*N* (%)	*N* (%)	*N* (%)	*N* (%)	χ^2	
Child gender	Male	16 (61.5)	18 (54.5)	34 (57.6)	8 (61.5)	13 (56.5)	21 (58.3)	0.38	
	Female	10 (38.5)	15 (45.5)	25 (42.4)	5 (38.5)	10 (43.5)	15 (41.7)		
Marital status	Single	10 (38.5)	12 (36.4)	22 (37.3)	7 (53.8)	7 (30.4)	14 (38.9)	1.99	
	Couple	16 (61.5)	21 (63.6)	37 (62.7)	6 (46.2)	16 (72.7)	22 (61.1)		

Note. Numbers in rows with different letters differ significantly. *F* differences between the four groups (2 type of care by 2 ethnicity) excluding total group._
Chi-squares for all groups (2 type of care by 2 ethnicity), excluding total group.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2.
Correlations Between Child Rearing and Demographic Background Variables at Time 1 in the MLCS (N = 95) and ELPI (N = 10,723)

		1	2	3	4	5	6	7	8	9	10	11	12	13
1	Type of care[a]	-	.01	.01	.05***	-.02	.02*	-.01	.44***	.02*	.00			
2	Ethnicity[b]	.08	-	.09***	-.01	.10***	-.02*	-.00	-.01	.11***	.08***			
3	Income	.13	.25**	-	.08***	.44***	.09***	-.00	-.01	.24***	.22***			
4	Maternal age	.02	-.09	.12	-	.03***	.27***	.01	.18***	.06***	.08***			
5	Maternal education	-.02	.02	.27**	.05	-	-.02	-.00	-.03**	.29***	.26***			
6	Marital Status[c]	-.02	-.02	.16	.32***	.03	-	.02	.02*	.08***	.02			
7	Child gender	-.01	.04	.07	-.03	.04	.14	-	.01	.02	.03***			
8	Child age	-.34***	.19	.00	.06	.09	-.11	-.18	-	-.02*	-.03**			
9	HOME global quality Time 1	.04	.26**	.33***	-.02	.25**	.02	.09	.16	-	.26***			
10	HOME global quality Time 2	-.01	.04	.36***	-.03	.34***	.06	.16	.07	.43***	-			
11	ADS infant attachment Time 1	.02	.24*	.18	-.05	.13	-.00	.03	-.22*	-.07	.10	-		
12	ADS infant attachment Time 2	.06	-.07	.13	.03	.20*	.00	.01	-.01	.03	-.06	.04	-	
13	ADS mother sensitivity Time 1	.31**	.12	.16	.19*	.17	.11	-.01	.08	.17	.14	-.01	.15	-
14	ADS mother sensitivity Time 2	.02	-.05	.09	.05	.27**	.01	-.10	-.08	.08	.25*	.25*	.36***	.26*

Note. [a] Type of care: maternal care = 0, daycare = 1. In this table, maternal care and late daycare in ELPI were combined as maternal care; [b] Mapuche = 0, non-Mapuche = 1; [c] Marital status: single = 0, couple = 1 (married or unmarried). Correlations above the diagonal line represent the ELPI study.
*$p < .05$. ** $p < .01$. ***$p < .001$.

Table 3.
Descriptive Statistics of Child Rearing Variables in the MLCS (N = 95)

		Time 1 (6m)			Time 2 (14m)		
		Mapuche	Non-Mapuche	total	Mapuche	Non-Mapuche	total
Child rearing variables		*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
HOME global quality	Maternal care	.73 (.07)	.78 (.07)	.76 (.07)	.81 (.08)	.81 (.11)	.81 (.10)
	Daycare	.74 (.07)	.77 (.09)	.76 (.09)	.79 (.07)	.81 (.08)	.80 (.08)
	Total	.73 (.07)	.78 (.08)	.76 (.08)	.80 (.07)	.81 (.10)	.81 (.09)
ADS infant attachment	Maternal care	2.38 (1.06)	2.61 (1.03)	2.51 (1.04)	2.62 (1.33)	2.79 (1.29)	2.71 (1.30)
	Daycare	1.92 (0.95)	2.91 (1.16)	2.56 (1.18)	3.46 (1.05)	2.57 (1.59)	2.89 (1.47)
	Total	2.23 (1.04)	2.73 (1.09)	2.53 (1.09)	2.90 (1.29)	2.70 (1.41)	2.78 (1.36)
ADS mother sensitivity	Maternal care	3.00 (1.47)	3.03 (1.45)	3.02 (1.44)	2.88 (1.61)	2.70 (1.79)	2.78 (1.70)
	Daycare	3.77 (1.48)	4.00 (1.00)	3.92 (1.18)	2.92 (1.44)	2.78 (1.28)	2.83 (1.32)
	Total	3.26 (1.50)	3.43 (1.36)	3.36 (1.41)	2.90 (1.54)	2.73 (1.59)	2.80 (1.56)

Note. Sample distribution: Mapuche in maternal care $n = 26$, Mapuche in daycare $n = 13$; non-Mapuche in maternal care $n = 33$, non-Mapuche in daycare $n = 23$.

Changes in Attachment Relationship, Maternal Sensitivity and Quality of the Home Environment

To test whether the quality of the attachment relationship, maternal sensitivity and the quality of the home environment changed during the child's first year of life dependent on type of care and child ethnicity, we conducted two repeated measures MANCOVAs. Mean scores for both time points separated for type of care and ethnic group are displayed in Table 3. In the first doubly repeated measures MANCOVA, children's attachment relationship with the mother and maternal sensitivity –both measured with the ADS– were dependent variables, whereas in the second MANCOVA quality of the home environment was dependent variable. In both analyses, time was included as within-subjects variable, and type of care and ethnicity as between-subjects factors. In addition, parental income and child age were included as covariates, because of the significant associations with the variables of interest.

A repeated measures MANCOVA on children's attachment relationship and mother sensitivity using a 2 (time: Time 1 versus Time 2) by 2 (type of care: Maternal care versus Daycare) by 2 (ethnicity: Mapuche versus non-Mapuche) design with parental income and child age as covariate did not yield significant main effects of time, neither for attachment (Pillai's, F [1, 89] = 0.71 $p = .40$, $\eta_p^2 = .01$), nor for maternal sensitivity, (Pillai's, F [1, 89] = 0.04, $p = .84$, $\eta_p^2 = .00$). Thus, for the whole group attachment and maternal sensitivity did not change over time. However, we found a significant interaction effect of ethnicity by infant attachment behavior (Pillai's, F [1, 89] = 6.04, $p = .016$, $\eta_p^2 = .06$), and a three-way interaction effect of type of care by ethnicity by infant attachment behavior (Pillai's, F [1, 89] = 4.13, $p = .045$, $\eta_p^2 = .04$). As can be seen in Figure 1, infant attachment behavior positively changed from Time 1 to Time 2, but only for Mapuche children and specifically for those children who received daycare in the first year of life.

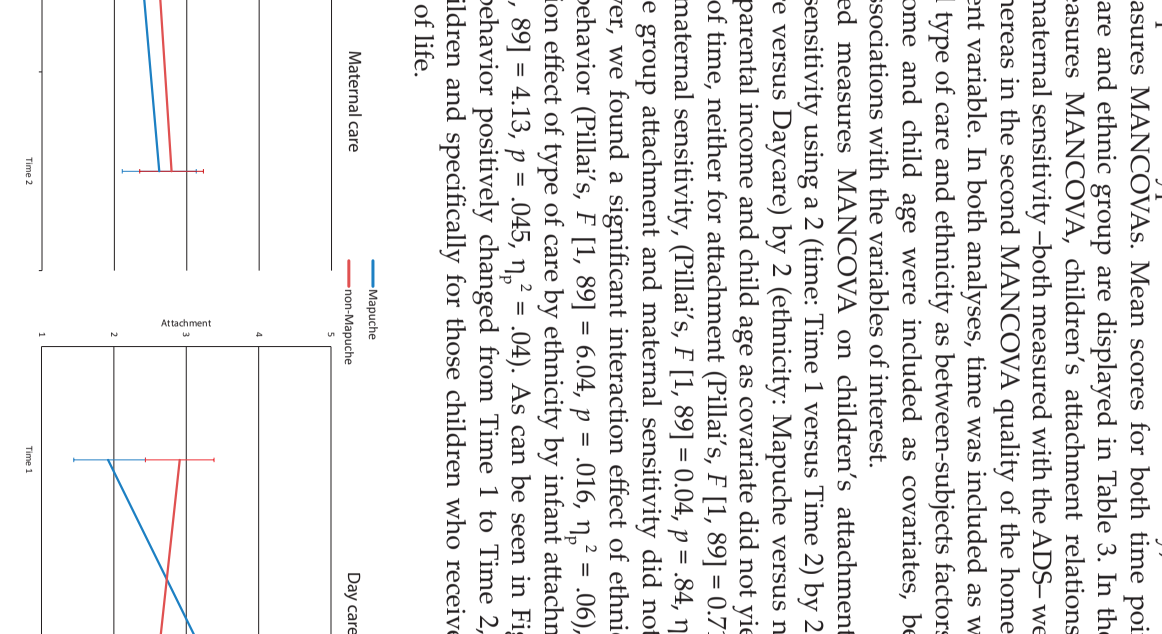

Figure 1. Changes in attachment behavior over time dependent on type of care and ethnicity.

To test whether the quality of the home environment changed during the child's first year of life dependent on type of care and ethnicity, we conducted

another repeated measures MANCOVA. We used a 2 (time: Time 1 versus Time 2) by 2 (type of care: Maternal care versus Daycare) by 2 (ethnicity: Mapuche versus non-Mapuche) design with parental income and child age as covariates. This did not yield a significant main effect of time (Pillai's, F [1, 89] = 0.10, p = .751, η_p^2 = .00). Also, we did not find any interaction effects between type of care, ethnicity and quality of the home environment.

Discussion

Our hypothesis that fulltime early daycare will have negative effects on the quality of child attachment behavior and maternal sensitivity was not confirmed. On the contrary, the subgroup of Mapuche children showed improved attachment behavior after one year of daycare. Our second hypothesis that daycare may have positive effects on the quality of the home environment was not confirmed either. Type of care (daycare versus maternal care) was not associated with changes in the quality of the home environment.

The findings of our study are intriguing. The implementation of the new Chilean policy to promote fulltime early daycare attendance has no negative effects on maternal sensitivity, child attachment behavior, and quality of the home environment. Neither could we demonstrate any overall positive effects. The exception was formed by the Mapuche children who benefitted from daycare and showed more secure attachment behavior after one year of daycare. It is possible that the caregiver-child interactions in daycare centers, which have been shown to be of high quality (Cárcamo et al., submitted), have positive effects on these children, and may compensate for lower quality of care at home. Within the Chilean context, these caregiver-child interactions are facilitated by the high level of education of the caregivers (at least 4 years of university or its equivalent), and the high number of caregivers per classroom. Future research will have to show whether this positive finding is indeed associated with ethnicity or that in larger samples with a broader income range it will turn out to be a socioeconomic status effect after all.

Strengths and limitations

This is the first longitudinal study to report on the effects of early full-time daycare on mother-child attachment and quality of the home environment. Moreover, it makes use of observation scales rather than self-reports or surveys. It is also the first empirical study focusing on infant attachment behavior and maternal sensitivity of the Mapuche minority in their region of origin.

The limited sample size restricts the generalizability of the results. Although the daycare centers in our sample belong to the same group of public centers that are carefully monitored, another limitation is that we did not control for quality of daycare and caregiver sensitivity. Drawing on the results from the NICHD study, it is possible that high quality care with a sensitive caregiver moderates the effects of low maternal sensitivity on attachment security. Finally, we did not check to what extent the Mapuche families in our sample share the traditional Mapuche values, which leaves the possibility open that we did not reach the

most 'orthodox' Mapuche group.

The results of our study are promising for the *Chile Grows With You* policy. In our sample, we found that attending daycare from a very young age and for many hours per week has no negative results for the mother-child attachment relationship and that the worries of both lay persons and experts could not be supported in this study. On the other hand, it remains to be seen whether the alleged positive effects of this policy (higher cognitive and socio-emotional skills in children, increased labor participation and better education for parents) will become a reality.

ELPI study

Method

Participants

ELPI data were available for two time points, in 2010 and 2012 respectively. We included families with complete data of the variables of interest at both time points resulting in a sample of N = 10,723 children and their families, of whom 776 (7%) families belonged to the Mapuche ethnic minority group and 9,947 (93%) families belonged to the majority group in Chile. Mean age of all mothers was 29.40 years (SD = 7.17) at Time 1. Mean age of the children was 30.50 months (SD = 12.76; range from 7 to 56 months) at Time 1, and 56.54 months (SD = 12.77; range from 33 to 83 months) at Time 2. Fifty percent of the sample consisted of boys and 28% were raised by single mothers. The educational level of the mothers was distributed as follows: 0.4% did not attend school or did not complete primary school, 18% percent completed primary school or some years in secondary school, 65% finished secondary school, and 16.6% finished vocational or university studies.

Because our main interest was type of care and Mapuche ethnicity, we only included families belonging to the Mapuche and majority (hereafter: non-Mapuche) ethnic groups, and we left out other ethnic minorities such as Aymara, Atacameño, Diaguita. Furthermore, we distinguished between children who started daycare before 24 months (early daycare) and after 24 months (late daycare). This was done because the children in the ELPI study were older than the children in the MLCS, and because the time span between Time 1 and Time 2 was wider than in the MLCS. This resulted in three groups, the maternal care group (N = 1,337; 12.5%), the early daycare group (N = 2,922; 27.2%), and the late daycare group (N = 6,464; 60.3%).

Procedure

The first time point for assessment was in 2010. During a first visit, the interviewers (n = 467; 78% female) introduced the ELPI through a letter which explained the study, highlighting its importance for the development of new public policies and clarifying the anonymity and voluntary participation. Interviewers tried to engage the participants, collected demographic data and arranged the second visit. The second visit was conducted by 326 observers (85% female), and all

of them had a higher education in the social sciences, mostly psychology. The goal of the second visit was to measure the child's physical, cognitive and socio-emotional development and the quality of the home environment. In the reported study, we will only use data on the home environment. Observations during the second visit were completed for 91.6% of the families interviewed during the first visit. Interviewers received an extensive training explaining the goal of the study, details of the survey, and the standardization of the procedures. The data collection took place in 2010; all the surveys were double-checked by supervisors, and 10% of the interviews were also supervised during data collection to ensure high quality of the process and the data.

The second time point for assessments was in 2012 and the same procedure was followed. The first visit was intended to re-engage the family into the study and to make an appointment for the second visit by a professional psychologist.

Instruments

Quality of home environment. Quality of the home environment was measured with the IT-HOME at Time 1. For the majority of the sample (n = 10,483; 97.7%) the Early Childhood Home Observation for Measurement of the Environment (EC-HOME; Caldwell & Bradley, 2003) was used at Time 2; in 240 families the IT-HOME was used at Time 2. In both measures, a restricted number of items were selected (32 items for IT-HOME at Time 1 and 22 items at Time 2, and 16 items for EC-HOME). Bivariate correlations between IT-HOME at Time 1 and Time 2, and between IT-HOME and EC-HOME were comparable (respectively r = .24 and r = .26). Internal consistency of both instruments was good, with a Cronbach's alpha of .77 for the IT-HOME at Time 1, α = .75 for IT-HOME at Time 2, and α = .81 for EC-HOME at Time 2. Because of comparable content of items, correlations and reliabilities, we decided to aggregate scores across IT-HOME and EC-HOME (at Time 2), resulting in one score for Time 2 (hereafter labeled as EC-HOME).

Background variables

Ethnicity. The ethnicity of the family was defined by self-report. Families were defined as belonging to the Mapuche when the mother and/or principal caregiver stated in the interview that they belonged to this particular minority.

Income. Mothers or main caregivers were asked for the monthly family income in Chilean Pesos (CLP). This resulted in the following 10 categories: less than $ 64.000 ($ 118 USD) (1); between $ 64.000 and $ 132.000 ($ 244 USD) (2); between $ 132.000 and $ 250.000 ($ 462 USD) (3); between $ 250.000 and $ 350.000 ($ 647 USD) (4); between $ 350.000 and $ 450.000 ($ 832 USD) (5); between $ 450.000 and $ 650.000 ($ 1.201 USD) (6); between $ 650.000 and $ 850.000 ($ 1.571 USD) (7); between $ 850.000 and $ 1.050.000 ($ 1.940 USD) (8); between $ 1.050.000 and $ 1.250.000 ($ 2.310 USD) (9); more than $ 1.250.000 (10).

Maternal educational level. The level of maternal education was self-reported using 19 categories ranging from no education to postgraduate. For the purposes of comparison with the MLCS, we transformed these categories into a 5-point scale (1 = *no education or incomplete elementary*; 2 = *incomplete secondary school*; 3 = *secondary school*; 4 = *vocational education*; 5 = *university studies*).

Results

Percentages of missing data ranged between 0.9% for maternal education to 3.9% for income. There were no missing data for our principal measure, the quality of the home environment (IT-HOME and EC-HOME). To obtain a complete dataset prior to the analyses, multiple imputation was performed (ten iterations) (Van Buuren, 2007; Goldstein & Woodhouse, 1996) including all available variables in the data set using predictive mean matching to impute missing data (Little, 1988; Rubin, 1986). Finally, the pooled imputed dataset (N = 10,723) was used for subsequent analysis.

Similarities and Differences in Background Variables dependent on Type of Care and Ethnicity

Firstly, using one-way ANOVAs we examined whether there were significant differences in background variables distinguishing Type of care (Maternal Care, Early Daycare, and Late Daycare) and Ethnicity (Mapuche versus non-Mapuche). As Table 4 shows, overall mean scores for relevant background variables were significantly different across groups. Overall differences across groups were found for income, F = 20.35, p < .001, η^2 = .01; for maternal education F = 45.87, p < .001, η^2 = .02; for mother age, F = 10.36, p < .001, η^2 = .00; and for child age F = 535.28, p < .001, η^2 = .20. Post hoc tests to detect significant pairwise comparisons (see Table 4) showed that within each of the three type of care groups Mapuche mothers had a significantly lower income and educational level than non-Mapuche mothers. Within type of care groups, there were no significant differences between ethnic groups regarding mother's age and child's age.

Chi-square testing was done for all dichotomous variables. No significant differences across groups were found for child gender. However, marital status differed significantly across groups: The early daycare group consisted of more single mothers than the maternal care group (χ^2 = 61.90, p = .001) and the late daycare group (χ^2 = 99.60, p = .001) (see Table 4).

Associations between Demographics and Quality of the Home Environment

At both time points, significant bivariate positive correlations were found between quality of the home environment and income (r = .24, p < .001 at Time 1, and r = .22, p < .001 at Time 2) and maternal education (r = .29, p < .001 at Time 1, and r = .26, p < .001 at Time 2). Moreover, ethnicity was also associated with income (r = .09, p < .001) and quality of the home environment at Time 1 (r = .11, p < .001), and at Time 2 (r = .08, p < .001) (see Table 2). Mapuche families had lower income and lower quality of the home environment.

Changes in Quality of the Home Environment

To test whether the quality of the home environment changed across the two time points dependent on child care and ethnicity, we conducted a repeated

Table 4.
Descriptive Statistics of Demographic Background Variables in the ELPI at Time 1

		Maternal Care			Early Daycare			Late Daycare			Significant pairwise Comparisons[a]		
		Mapuche $N = 113$	non-Mapuche $N = 1224$	Total $N = 1337$	Mapuche $N = 198$	non-Mapuche $N = 2724$	Total $N = 2922$	Mapuche $N = 465$	non-Mapuche $N = 5999$	Total $N = 6464$			
Demographics background		*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	MC	ED	LD
Income		3.63 (1.83)	4.37 (2.03)	4.31 (2.02)	4.17 (1.80)	4.67 (2.19)	4.63 (2.17)	3.77 (1.81)	4.56 (2.15)	4.50 (2.14)	M < nM	M < nM	M < nM
Maternal education		2.67 (0.76)	2.95 (0.71)	2.93 (0.72)	2.94 (0.70)	3.17 (0.75)	3.15 (0.75)	2.73 (0.64)	3.02 (0.71)	2.99 (0.71)	M < nM	M < nM	M < nM
Maternal age (years)		29.43 (7.75)	29.17 (7.09)	29.19 (7.15)	28.98 (7.11)	28.64 (7.09)	28.66 (7.09)	30.11 (7.28)	29.76 (7.17)	29.78 (7.17)	n.s.	n.s.	n.s.
Child age (months)		17.92 (7.94)	16.71 (6.72)	16.81 (6.83)	29.49 (13.10)	28.50 (12.43)	28.56 (12.48)	34.71 (11.55)	34.17 (11.66)	34.21 (11.66)	n.s.	n.s.	n.s.
		N (%)	*N* (%)	*N* (%)	*N* (%)	*N* (%)	*N* (%)	*N* (%)	*N* (%)	*N* (%)	χ^2		
Child gender	Male	51 (45.1)	599 (48.9)	650 (48.6)	105 (53.0)	1356 (49.8)	1461 (50.0)	228 (49.0)	3052 (50.9)	3280 (50.7)	4.09		
	Female	62 (54.9)	625 (51.1)	687 (51.4)	93 (47.0)	1368 (50.2)	1461 (50.0)	237 (51.0)	2947 (49.1)	3184 49.3)			
Marital status	Single	28 (24.8)	298 (24.3)	326 (24.4)	66 (33.3)	963 (35.4)	1029 (35.2)	102 (21.9)	1613 (26.9)	1715 (26.5)	94.58***		
	Couple	85 (75.2)	926 (75.7)	1011 (75.6)	132 (66.7)	1761 (64.6)	1893 (64.8)	363 (78.1)	4386 (73.1)	4749 (73.5)			

Note. MC= Maternal Care; ED= Early Daycare; LD= Late Daycare.
[a] The pairwise comparisons are between ethnic groups within type of care.

Table 5.
Descriptive Statistics of Quality of the Home Environment in the ELPI (N = 10,723)

		Time 1			Time 2		
		Mapuche $N = 776$	non-Mapuche $N = 9947$	Total $N = 10723$	Mapuche $N = 776$	non-Mapuche $N = 9947$	Total $N = 10723$
		M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
HOME global quality	Maternal care	.68 (.15)	.75 (.13)	.75 (.14)	.58 (.20)	.66 (.20)	.65 (.21)
	Early daycare	.73 (.13)	.76 (.13)	.76 (.13)	.61 (.22)	.68 (.21)	.67 (.21)
	Late daycare	.70 (.14)	.76 (.13)	.76 (.13)	.60 (.21)	.67 (.21)	.66 (.21)
	Total	.71 (.14)	.76 (.13)	.76 (.13)	.60 (.21)	.67 (.21)	.66 (.21)

measures MANCOVA. Mean scores for both time points by type of care and by ethnic group are displayed in Table 5. Because the imputed datasets do not provide pooled outcomes for repeated measures analysis, we report the whole range of F's, p's values and partial η^2 scores from the five imputations. All the analyses were done with and without child age as a covariate and since the results remained the same, we decide to keep this variable as a covariate. We used a 2 (time: Time 1 versus Time 2) by 3 (type of care: Maternal Care, Early Daycare, and Late Daycare) by 2 (ethnicity: Mapuche versus non-Mapuche) design with parental income and child age as covariates. This analysis yielded a significant main effect of time (Pillai's, $58.68 \leq F\ [1, 10710] \leq 63.97$, $p < .001$, $.005 \leq \eta_p^2 \leq .006$). Thus for the whole group, quality of the home environment decreased over time. However, this main effect was qualified by a 3-way interaction effect of quality of the home environment by income and ethnicity (Pillai's, $3.85 \leq F\ [1, 10710] \leq 6.28$, $.012 \leq p \leq .050$, $\eta_p^2 = .00$), showing that in Mapuche families from lower SES a decrease in home quality was most apparent. No other interaction effects were found.

To take a closer look at the interaction effect, the variable income was dichotomized using a median split (median = 4) resulting in two income groups: lower income (n = 6,409; 60%) versus higher income (n = 4,314; 40%). For each income level, we performed a repeated measures analysis using a 2 (time: Time 1 versus Time 2) by 3 (type of care: Maternal Care, Early Daycare, and Late Daycare) by 2 (ethnicity: Mapuche versus non-Mapuche) design with child age as covariate. For the lower income group, only a time effect was significant (Pillai's, $40.42 \leq F\ [1, 6402] \leq 45.45$, $p < .001$, $.005 \leq \eta_p^2 \leq .006$). This result indicates that within the lower income group, all families experienced a decrease in the quality of the home environment, independently of the type of care and ethnicity. For the higher income group, the analysis also yielded a significant main effect of time (Pillai's, $27.53 \leq F\ [1, 4307] \leq 31.03$, $p = .001$, $.006 \leq \eta_p^2 \leq .007$). Thus for the whole higher income group, quality of the home environment decreased over time. However, this main effect was qualified by a 2-way interaction effect of quality of the home environment by ethnicity only in two data sets, the original data set (prior to imputation, 4% of subjects excluded) (Pillai's, $F\ [1, 4116] = 4.52$, $p = .034$, $\eta_p^2 = .001$), and in one of the five imputed data sets (Pillai's, $F\ [1, 4341] = 3.87$, $p = .049$, $\eta_p^2 = .001$). This interaction effect shows that in the higher income group, Mapuche families experienced a more evident decline in the quality of the home environment than non-Mapuche families. However, for the majority of the imputed data sets there was no significant interaction effect and the effect sizes were very small, implying that within the higher income group, if ethnicity plays a role, it is very small.

Discussion

Our analysis of data from the ELPI dataset showed that the quality of the home environment decreased from Time 1 to Time 2, irrespective of the type of care (daycare versus maternal care). Thus, the ELPI data show that type of childcare does not differentially affect the quality of the home environment.

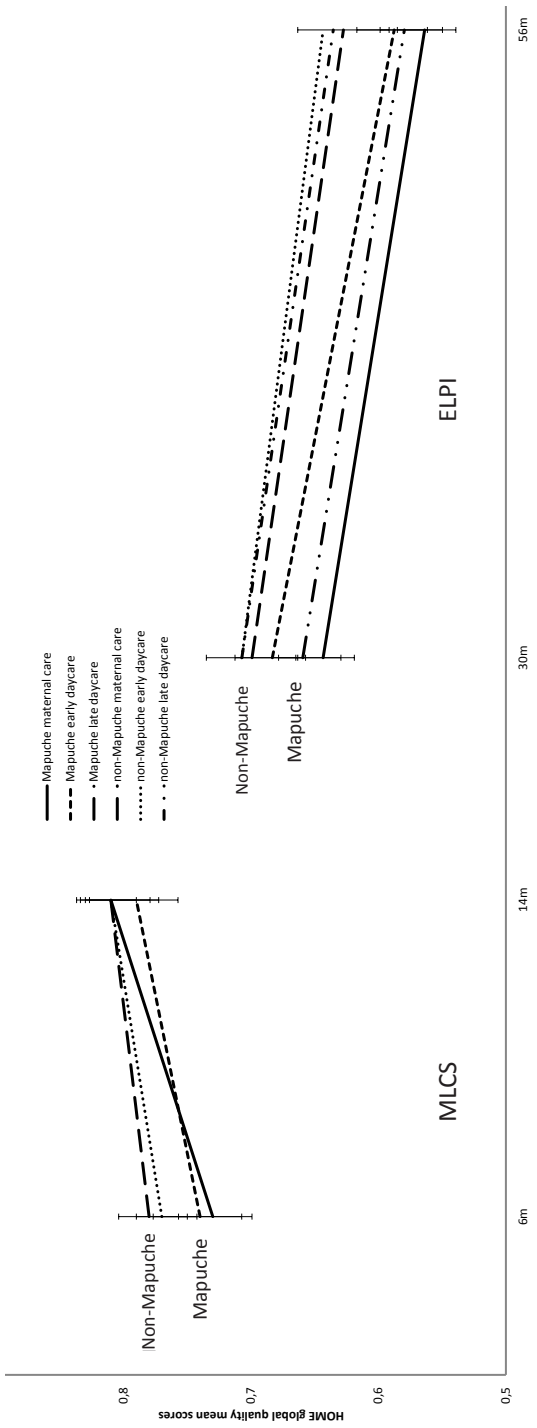

Figure 2. Trajectory of the quality of the home environment scores across time in Mapuche and non-Mapuche children with different types of care arrangements.
Note. In the MLCS study there are not children representing the Late daycare group.

Fulltime early daycare has neither positive nor negative effects on the quality of the home environment as compared with maternal care. The fact that quality of the home environment for all families decreases from Time 1 to Time 2 remains to be explained. Possibly, parents pay less attention to the quality of the home environment as the child grows older and/or they have to divide their limited attention over more siblings (see Figure 2).

Strengths and limitations
The strength of the ELPI is that it is a longitudinal study that uses observational measures (e.g., HOME) in a very large sample that is representative of Chile. Also, it covers a wider child age range and distinguishes between early and late daycare entrance. Limitations of the ELPI, for our purpose, are that it does not include a measurement of attachment behavior or maternal sensitivity. Another limitation is that like in the MLCS the ELPI did not measure daycare center quality.

General Discussion

In the MLCS the fear that fulltime early daycare has negative effects on the quality of child attachment behavior and maternal sensitivity could not be substantiated. A general negative effect did not emerge and the subgroup of Mapuche children from lower income groups even showed improved attachment behavior after one year of daycare. The MLCS also showed, contrary to our expectation, that type of care (daycare versus maternal care) was not associated with changes in the quality of the home environment. This finding was confirmed in the ELPI where we found that quality of the home environment decreased from Time 1 to Time 2, irrespective of the type of care (daycare versus maternal care).

Strengths and limitations
The MLCS used various indicators and instruments to measure the quality of the childcare environment but the size and representativeness of its sample may be a cause of concern. The ELPI study provides just one instrument to measure the quality of the childcare environment but the sample is large and representative. In this respect, the two studies complement each other. For both studies, the instruments used limit the conclusions to be drawn. However, we were able to cross-validate some results of the MLCS using data from the ELPI study, thus comparing the findings from a restricted number of families and a limited variation of SES with findings from a larger family data set with more variation in SES levels.

The finding that full-time early daycare has no effect on mother-child attachment is intriguing. It was expected that the combination of low income and high number of hours spent in daycare would negatively affect the mother-child relationship. The family stress model (Mesman et al., 2012) predicts that mothers who suffer financial stress, bad housing conditions, marital discord etc. are less sensitive in reacting to their infants. However, in the MLCS we did not find lower sensitivity in mothers from low to moderately low income levels.

Early and full-time daycare in itself did not seem detrimental to the mother-child relationship. First, mothers may compensate for the time children spend at daycare by interacting with increased intensity with their children at home (Ahnert et al., 2000). Second, daycare centers may provide adequate models of caregiver-child interaction that parents and their children reproduce in their interactions at home. The combined results of the MLCS and the ELPI show that full-time daycare for children has no negative consequences for the attachment relationship and the quality of the home environment, at least as far as we were able to examine with a restricted number of measures within a restricted time-frame.

Future research will have to show whether the policy from the Chilean government has the expected positive effects for cognitive and socio-emotional development of children and is indeed instrumental in breaking the cycle of poverty.

Concluding Remarks

The quality of childcare and its availability to individuals of lower social and economic status may be seen as a synoptic indicator of the health and social condition of a country (cf. Gortmaker & Wise, 1997). Young children are particularly vulnerable to poverty and substandard living conditions. Therefore, socioeconomic disparities in child mortality and morbidity can be seen to represent a kind of 'social mirror', reflecting broad inequalities in a society. Even in wealthy countries, such as the United States, pronounced differences exist among social, economic and ethnic groups and geographical areas. In this dissertation, we payed attention to childcare in Chile with particular attention to socioeconomic and ethnic disparities.

In Chapter 1 childcare in Chile was discussed from a historic perspective. It was shown that the history of Chilean childcare went through four stages. During a first stage, which lasted well into the nineteenth century, infant mortality and morbidity was still extremely high and poor parents regularly abandoned their children to foundling homes. Around 1900, under the influence of foreign examples, the first attempts were made to reduce infant mortality by introducing well-baby clinics, which provided advice, medical checks, and sterilized cow milk free of charge. Somewhat later, attempts were made to extend free medical care to older children, their mothers, and, more generally, to those who needed it. This attempt proved only partially successful and to this day private and state medical care co-exist. Nevertheless, infant mortality and morbidity kept diminishing and today Chile, in contradistinction to other Latin-American countries, has reached mortality and malnutrition rates comparable to those of European countries. Nevertheless, marked differences between various socioeconomic end ethnic groups and regional areas remain. For this reason, the first Bachelet administration introduced the *Chile Grows With You* (*Chile Crece Contigo*) program in 2007. Its aim was to improve both the socioeconomic and health conditions of the most vulnerable groups in society. New was the emphasis on young children's socio-emotional wellbeing and cognitive development.

In Chapter 2 attention was paid to the quality of a sample of Chilean daycare centers. Part of the program *Chile Grows With You* was to guarantee free access to daycare for children from the lower income ranges. The aim was to provide the children with a stimulating and secure environment and to allow their parents to work or continue their education. Parents might thus improve their skills and gain a higher family income and children might benefit socio-emotionally and cognitively from the interaction with other children under the guidance of a professional caregiver. Given the enormous increase in public daycare centers in Chile over the last decade, their quality has become a matter of concern. However, our study showed that their average quality has not decreased and

is comparable to that of European daycare centers. Moreover, relatively simple measures (increased supervision, compliance with existing regulation) can improve the quality of Chilean daycare still further.

Chapter 3 was devoted to a validation study of the Massie-Campbell Attachment During Stress Scale (ADS). The ADS is widely used in Chile and was introduced to detect problematic mother-infant interactions. Trained observers score the behavior displayed by infant and mother immediately after the regular pediatric examination at 4 and 12 months old. The ADS, introduced as part of *Chile Grows With You*, results in the classification of infants as being securely attached, insecure avoidantly attached or insecure resistantly attached to the mother. This classification is followed by preventive interventions for mothers of insecurely attached infants, regardless of the type of insecure attachment. In our study, we managed to show that the ADS can distinguish reasonably well between securely attached and non-securely attached infants as measured with the Strange Situation Procedure (SSP) and is also associated with maternal sensitivity. Despite a number of shortcomings, for which we provide remedies, it seems possible to continue using the ADS as a first screening device in pediatric practice.

In chapter 4 we paid attention to ethnic differences in Chile. The *Chile Grows With You* program aims to reach all minority groups and takes care to formulate childcare advice in ways that are acceptable in the local ethnic communities. It is unclear, however, to what extent minority groups in Chile still provide a different childcare environment if we control for economic differences. In this chapter we focused on the Mapuche ethnic group and investigated whether they offer a strongly divergent childrearing environment compared to the majority group (non-Mapuche). It is concluded that in our sample this is not the case and that existing differences are explained by income. This result was cross-validated using the data of the massive Encuesta Longitudinal de la Primera Infancia (ELPI). These data confirm that the differences in quality of childcare environment between Mapuche and non-Mapuche families are very small and that Mapuche families are distinguished by lower income and lower maternal education. This finding once again confirms that ethnicity, family income, and education are intimately connected and suggests that to improve the childrearing environment eliminating socioeconomic inequality is imperative.

Chapter 5 discussed an investigation into the long-term effects of full-time daycare. The *Chile Grows With You* program offers free daycare to the lowest income groups as a means to break the cycle of poverty. Parents can bring their infant to a daycare center when it is six months old and leave it for 40 or more hours per week. The idea is that both parents and children will benefit from such an arrangement. However, from the viewpoint of attachment theory, the success of such an arrangement cannot be taken for granted. Previous research has shown that the combination of poor, overburdened parents and full-time daycare is an unhappy one and may negatively affect the mother-infant attachment relationship. In our study we compared the effects of one year of full-time daycare with those of one year of maternal care at home in a low-income sample. Contrary to expectations, daycare did not negatively affect the mother-

child relationship as compared to maternal care nor did it have an effect on the quality of the home environment. Using data from the ELPI, we were able to confirm the result that type of care does not differentially affect quality of the home environment. That this quality seems to decrease over the first years of life is a phenomenon that remains to be explained.

It is hoped that the results of these studies will contribute to the debate about the goals and effects of Chile Grows With You, one of the most ambitious attempts to fight poverty and inequality in recent history. If Chile genuinely wishes to overcome its history of inequality, it will need the concerted efforts of laymen, practitioners and researchers alike.

References

Ahnert, L., Rickert, H., & Lamb, M.E. (2000). Shared Care Giving: Comparison between Home and Child Care. *Developmental Psychology, 36*, 339-351.

Ainsworth, M. D. S., Bell, S. M., & Stayton, D. J. (1974). Infant-mother attachment and social development: Socialization as a product of reciprocal responsiveness to signals. In M. P. M. Richards (Ed.), *The integration of a child into a social world* (pp. 99-135). London: Cambridge University Press.

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation.* Hillsdale, NJ: Erlbaum.

Ainsworth, M.D.S., & Wittig, B. A. (1969). Attachment and exploratory behaviour of one-year-olds in a strange situation. In B. M. Foss (Ed.), *Determinants of infant behaviour* (Vol. 4, pp. 111-136). London: Methuen.

Alvarado, R., Zepeda, A., Rivero, S., Rico, N., López, S., & Díaz, S. (1999). Integrated maternal and infant health care in the postpartum period in a poor neighborhood in Santiago, Chile. *Studies in Family Planning, 30*(2), 133-141.

Alvarez, M. L., Wugaft, F., & Salazar, M. E. (1988). Health and poverty in families with children. *Pediatric Research, 23*(6), 649-649.

Alves, D., & Belluzzo, W. (2004). Infant mortality and child health in Brazil. *Economics and Human Biology, 2*:391-410.

Amigo, H., Bustos, P., & Kaufman, J. S. (2010). Absence of disparities in anthropometric measures among Chilean indigenous and non-indigenous newborns. *Bmc Public Health, 10*, 1-8.

Amigo, H., Bustos, P., Leone, C., & Radrigán, M. E. (2001). Growth deficits in Chilean school children. *Journal of Nutrition, 131*(2), 251-254.

Araneda, M. E., Santelices, M. P., & Farkas, C. (2010). Building infant-mother attachment: the relationship between attachment style, socio-emotional well-being and maternal representations. *Journal of Reproductive and Infant Psychology, 28*(1), 30-43.

Araya, M., Espinoza, J., Zegers, B., Cruchet, S., Brunser, O., Humphreys, D., et al. (1996). Altered maternal psychological profile as health risk factor in poor urban infants. *Acta Paediatrica, 85*(10), 1213-1216.

Ariès, P. (1996). *Centuries of Childhood*. UK: Pimlico Edition.

Bakermans-Kranenburg, M. J., & Van IJzendoorn, M. H. (2003). *Vragenlijst voor kennis en attituden over de opvoeding* [Questionnaire concerning knowledge and attitudes towards parenting]. Unpublished manuscript, Leiden University, Leiden, the Netherlands.

Bakermans-Kranenburg, M. J., Van IJzendoorn, M. H., & Kroonenberg, P. M. (2004). Differences in attachment security between African-American and white children: ethnicity or socio-economic status? *Infant Behavior and Development, 27*, 417-433. doi: 10.1016/j.infbeh.2004.02.002

Barría, R. M., Santander, G., & Victoriano, T. (2008). Factors associated with exclusive breastfeeding at 3 months postpartum in Valdivia, Chile. *Journal of Human Lactation, 24*, 439-445.

Baumeister, L., Marchi, K., Pearl, M., Williams, R., & Braveman, P. (2000). The validity of information on 'race' and 'hispanic ethnicity' in California birth certificate data. *Health Services Research, 35* (4), 869-883.

Bedregal, P. (2008). Instrumentos de medición del desarrollo en Chile [Instruments to measure development in Chile]. *Revista Chilena de Pediatría, 79*, supl. (1), 32-36. doi: 10.4067/S0370-41062008000700006

Bedregal, P., Hernandez, V., Prado, P., Castanon, C., Mingo, V., & de la Cruz, R. (2010). Hacia la evaluación de "Chile Crece Contigo": Resultados psicosociales del estudio piloto [Preliminary report of a governmental program on children psychosocial development care in Chile]. *Revista Médica de Chile, 138*(6), 791-793.

Behrman, J.R., & Skoufias, E. (2004). *Correlates and determinants of child anthropometrics in Latin America: background and overview of the symposium*. Inter-American Development Bank. Research Network Paper #R-496.

Bisceglia, R., Perlman, M., Schaack, D., & Jenkins, J. (2009). Examining the psychometric properties of the Infant-Toddler Environment Rating Scale-Revised Edition in a high-stakes context. *Early Childhood Research Quarterly, 24,* 121-132.

Blanco, Ch., & Meneses, F. (2011). *Estudiantes indígenas y educación superior en Chile: accesos y beneficios* [Indigenous students in Chile and higher education: access and benefits.]. Paper presented at the Seminario Internacional Inclusión Social y Equidaden la Educación Superior. Abstract retrieved from http://fundacionequitas.org/descargas/UFRO_Final_Publicacion_web.pdf#page=89 .

Boehmer, U., Kressin, N. R., Berlowitz, D. R., Christiansen, C. L., Kazis, L. E., & Jones, J. A. (2002). Self-reported vs administrative race/ethnicity data and study results. *American Journal of Public Health, 92* (9), 1471-1473.

Borenstein, M., Hedges, L., Higgins, S., & Rothstein, D. (2009). *Introduction to Meta-Analysis.* Chichester: Wiley.

Bornstein, M. H., Tamis-LeMonda, C. S., Tal, J., Ludemann, P., Toda, S., Rahn, C. W., . . . Vardi, D. (1992). Maternal responsiveness to infants in three societies: the United States, France, and Japan. *Child Development, 63,* 808-821.

Bowlby, J. (1969/1982). *Attachment and loss: Vol. 1. Attachment.* New York: Basic Books.

Bradley, R. H., Corwyn, R. F., & Whiteside-Mansell, L. (1996). Life at home: Same time, different places – an examination of the HOME inventory in different cultures. *Early Development and Parenting, 5*, 251-269.

Bradley, R. H., Corwyn, R. F., McAdoo, H. P., & Coll, C. G. (2001). The home environment of children in the United States Part I: Variations by age, ethnicity, and poverty status. *Child Development, 72*, 1844–1867.

Bretherton, I., Ridgeway, D., & Cassidy, J. (1990). Assessing internal working models of the attachment relationship: An attachment story completion task for 3-year-olds. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years* (pp. 273-308). Chicago: University of Chicago Press.

Bronfenbrenner, U. (Ed.) (2005). *Making human beings human: Bioecological perspectives on human development*. Thousand Oaks: SAGE Publications.

Bronfenbrenner, U., & Morris, P. A. (1998). The ecology of developmental processes. In W. Damon (Series Ed.) and M. R. Lerner (Vol. Ed.), *Handbook of Child Psychology: Vol. 1. Theoretical models of human development* (5th ed., pp. 993-1028). New York: Wiley.

Burchinal, M. R., Cryer, D., Clifford, R. M., & Howes, C. (2002). Caregiver training and classroom quality in child care centers. *Applied Developmental Sciences, 6,* 2-11.

Burchinal, M. R., Roberts, J. E., Riggins, R., Zeisel, S., Neebe, E., & Bryant, D. M. (2000). Relating quality of center-based child care to early cognitive and language development longitudinally. *Child Development, 71,* 339–357.

Bustos, C. H., M.; Herrera, M.; Mathiesen, M. (2001). Calidad del ambiente del hogar: Inventario HOME como un instrumento de medición [Quality of home environment, HOME scale as a measuring instrument]. *Estudios Pedagógicos, 27*, 7-22.

Bustos, P., Amigo, H., Muñoz, S. R., & Martorell, R. (2001). Growth in indigenous and nonindigenous Chilean schoolchildren from 3 poverty strata. *American Journal of Public Health, 91*(10), 1645-1649.

Bustos, P., Muñoz, S., Vargas, C., & Amigo, H. (2009). Evolution of the nutritional situation of indigenous and non-indigenous Chilean schoolchildren. *Annals of Human Biology, 36*(3), 298-307.

Buvinic, M., Valenzuela, J. P., Molina, T., & González, E. (1992). The fortunes of adolescent mothers and their children - The Transmission of Poverty in Santiago, Chile. *Population and Development Review, 18*(2), 269-297.

Byrt, T., Bishop, J., & Carlin, J. (1993). Bias, prevalence and kappa. *Journal of Clinical Epidemiology, 46*, 423-429.

Caldwell, B. M., & Bradley, R. H. (2003). *Home Observation for Measurement of the Environment: Administration Manual.* Little Rock, AR: University of Arkansas.

Campos, M.; Márquez, F.; Wilson, L. (2010). Teaching chilean mothers to massage their full-term infants. Effects on maternal breast-feeding and infant weight gain at age 2 and 4 months. *The Journal of Perinatal & Neonatal Nursing, 24,* 172-179.

Caniguan, N. (2012). Infancia mapuche y migración en el Budi. [Mapuche infancy and migration in the Budi]. *Revista Iberoamericana sobre Niñez y Juventud en Lucha por sus Derechos, 4,* 135-141.

Cárcamo, R.A., Lagos, S., & Gómez, E. (2013). *Apego en niños con asistencia temprana a salas cuna en la ciudad de Punta Arenas, Chile: un estudio piloto.* [Attachment of children with early entry to day care of the city of Punta Arenas, Chile]. Manuscript submitted for publication.

Cárcamo, R.A., Van IJzendoorn, M.H., Vermeer, H.J., & Van der Veer, R. (2013). The validity of the Massie-Campbell Attachment During Stress Scale (ADS). *Journal of Child and Family Studies*. Advance online publication. doi: 10.1007/s10826-013-9728-z

Cárcamo, R.A., Vermeer, H.J., De la Harpe, CH., Van der Veer, R., Van IJzendoorn, M.H. (2013*). Childcare quality in Chile from an international perspective*. Manuscript submitted for publication.

Casey, A. D., Wong, K., Stacks, A. M., Beeghly, M., & Barnett, D. (2013). Parenting and attachment among low-income African American and Caucasian preschoolers. *Journal of Family Psychology, 27*, 629-638. doi: 10.1037/a0033341

Castillo, M., Cortes, F., & De Andraca, I. (1993). Growth delay in school age children of low socioeconomic level – its impact on cognitive functioning. *Pediatric Research, 33*(6), 661-661.

Causadias, J. M., Sroufe, L. A., & Herreros, F. (2011). The establishment of an attachment research network in Latin America: Goals, accomplishments, and challenges. *Attachment & Human Development, 13*, 193-198. doi: 10.1080/14616734.2011.554008

Chan, M. (1987, April). *Maternal attachment behavior with adopted and birth infants.* Paper presented at the Biennial Meeting of the Society for Research in Child Development, Baltimore, MD. Abstract retrieved from http://eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb=true&_&ERICExtSearch_SearchValue_0=ED286588&ERICExtSearch_SearchType_0=no&accno=ED286588

Chávez, C., Castillo, M., & Lozoff, B. (2008). Chaos in the family environment and violent behaviour towards children. *Pediatric Research, 63*, 23.

Chile Crece Contigo. (n.d.). *Cuatro años creciendo juntos: Memoria de la Instalación del Sistema de Protección Integral a la Primera Infancia: Chile Crece Contigo 2006-2010.* [*Four years growing together: Memory of implementation of the System of Integral Protection to Early Infancy: Chile Grows With You 2006-2010*]. Retrieved June 11, 2013, from http://crececontigo.gob.cl

Cicchetti, D. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessments, 6*, 284-290. doi: 10.1037/1040-3590.6.4.284

Clark, K. M., Castillo, M., Calatroni, A., Walter, T., Cayazzo, M., Pino, P., et al. (2006). Breast-feeding and mental and motor development at 5 1/2 years. *Ambulatory Pediatrics, 6*(2), 65-71.

Clarke-Stewart, A., & Allhusen, V. D. (2005). *What we know about childcare*. Cambridge, MA: Harvard University Press.

Clerkx, L.E. & IJzendoorn, M.H. van (1992). Child care in a Dutch context: On the history, current status, and evaluation of nonmaternal child care in the Netherlands. In M.E. Lamb, K.J. Sternberg, C-P Hwang & A.G. Broberg (Eds.), *Child care in context: Cross-cultural perspectives* (pp.55-79). Hillsdale, NJ: Lawrence Erlbaum.

Colombo, M., de la Parra, A., & López, I. (1992). Intellectual and physical outcome of children undernourished in early life is influenced by later environmental conditions. *Developmental Medicine and Child Neurology, 34*(7), 611-622.

Cryer, D., Tietze, W., Burchinal, M., Leal, T., & Palacios, J. (1999). Predicting process quality from structural quality in preschool programs: A cross-classroom comparison. *Early Childhood Research Quarterly, 14*, 339-361.

Cunningham, H. (1995). *Children and childhood in Western society since 1500.* Edingburgh Gate: Pearson Education.

De Aguiar, S., Santelices, M. P., Pérez, J. (2009). Apego, sensibilidad paterna y patrón de interacción del padre con su primer bebé [Attachment, parental sensibility and interactional pattern between fathers and their first babies]. *Revista Argentina De Clínica Psicológica, 18*(1), 51-58.

De Andraca, I., Castillo, M., & Cortes, F. (1996). Stunting in school age children of low socioeconomic level (SEL) cognitive performance. *Pediatric Research, 39*(2), 370-370.

De Wolff, M. S., & Van IJzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development, 68*, 571-591.

Derogatis, L. R. (1993). *The Brief Symptom Inventory (BSI). Administration, Scoring and Procedures Manual* (Third Edition). Minneapolis: National Computer Systems.

Domínguez, P., Moreno, L., Narvaez, L., Herrera, M. O., & Mathiesen, M. E. (2008). *Prácticas Pedagógicas de Calidad. Informe Final* [*Teaching Practices of Quality. Final Report*]. Ministerio de Educación de Chile MINEDUC. Retrieved from http://bibliotecacentrodeestudios.mineduc.cl/CEusuarioANONIMO/

Donoso, E. (2004). Desigualdad en mortalidad infantil entre las comunas de la provincia de Santiago [Inequalities in infant mortality in Santiago. *Revista Médica de Chile, 132*, 461-466.

Dunbar, E., Saiz, J. L., Stela, K., & Saez, R. (2000). Personality and Social Group Value Determinants of Out-Group Bias: A Cross-National Comparison of Gough's Pr/To Scale. *Journal of Cross-Cultural Psychology, 31* (2), 267-275. doi: 10.1177/0022022100031002009

Duncan, G. & Brooks-Gunn, J. (Eds.) (1997). *Consequences of growing up poor*. New York: Russel Sage Foundation.

Dussaillant, F. (2012). *Asistencia de niños a establecimientos preescolares: aproximación a la demanda a través de un análisis de las elecciones de cuidado y trabajo de los hogares*. [*Attendance at pre-school children: approach to the demand through an analysis of the election of care and household work*]. Chile: PNUD – Centro de Estudios MINEDUC. Retrieved from http://www.supereduc.cl/usuarios/mineduc/doc/201203261228190.Otra_evidencia.pdf

Dyhouse, C. (1978). Working-class mothers and infant mortality in England, 1895-1914. *Journal of Social History, 12*, 248-267.

Emmen, R. A. G., Malda, M., Mesman, J., Ekmekci, H., & Van IJzendoorn, M. H. (2012). Sensitive parenting as a cross-cultural ideal: sensitivity beliefs of Dutch, Moroccan, and Turkish mothers in the Netherlands. *Attachment and Human Development, 14*, 601-619. doi: 10.1080/14616734.2012.727258

Farkas, C., & Valdés, N. (2010). Maternal stress and perceptions of self-efficacy in socioeconomically disadvantaged mothers: An explicative model. *Infant Behavior & Development, 33*(4), 654-662.

Farkas-Klein, C. (2008). Escala de Evaluación Parental (EEP): Desarrollo, propiedades psicométricas y aplicaciones. [Parental Rating Scale (EEP): Development, psychometric properties and applications]. *Universitas Psychologica, 7*, 457-467.

Fenech, M., Sweller, N., & Harrison, L. (2010). Identifying high-quality centre-based childcare using quantitative data-sets: what the numbers do and don't tell us. *International Journal of Early Years Education, 18*, 283-296.

Fernández, A. W. H., Giusti, A. E., & Sotelo, J. M. (2007). The Chilean infant mortality decline: improvement for whom? Socioeconomic and geographic inequalities in infant mortality, 1990-2005. *Bulletin of the World Health Organization, 85*(10), 798-804.

Fitzgerald, A. & Coop, C. (2011). Validation and modification of the graphical appraisal tool for epidemiology (GATE) for appraising systematic reviews in evidence-based guideline development. *Health Outcomes Research in Medicine, 2*, 51-59.

Friedman, S. L., & Boyle, D. E. (2008). Attachment in US children experiencing nonmaternal care in the early 1990s. *Attachment & Human Development, 10*, 225–261.

Fritsch, R., Montt, M. E., Solís, J., Pilowsky, D., & Rojas, M. G. (2007). ¿Cómo es la salud mental de los hijos de madres deprimidas consultantes a servicios de atención primaria? [Psychopathology and social functioning among offspring of depressed women]. *Revista Médica de Chile, 135*(5), 602-612.

Fuchs, R. (1984). *Abandoned children: Foundlings and child welfare in nineteenth-century Paris*. Albany: SUNY Press.

Gevers Deynoot-Schaub, M. J. J. M., & Riksen-Walraven, J. M. A. (2005). Child care under pressure: The quality of Dutch centers in 1995 and 2001. *The Journal of Genetic Psychology, 66*, 280-296.

Goldstein, H., & Woodhouse, G. (1996). *Multilevel Models with Missing Data*. Eleventh International Workshop on Statistical Modelling, Orvieto, Italy.

González, R., Requejo, J. H., Nien, J. K., Merialdi, M., Bustreo, F., & Betran, A. P. (2009). Tackling Health Inequities in Chile: Maternal, Newborn, Infant, and Child Mortality Between 1990 and 2004. *American Journal of Public Health, 99*(7), 1220-1226.

Gortmaker, S.L., & Wise, P.H. (1997). The first injustice: Socioeconomic disparities, health services technology, and infant mortality. *Annual Review of Sociology, 23*, 147-170.

Groeneveld, M. G., Vermeer, H. J., Van IJzendoorn, M. H., & Linting, M. (2011). Enhancing home-based child care quality through video-feedback intervention: A randomized controlled trial. *Journal of Family Psychology, 25*, 86-96. doi: 10.1037/a0022451

Gunnar, M.R., Talge, N.M., & Herrera, A. (2009). Stressor paradigms in developmental studies: What does and does not work to produce mean increases in salivary cortisol. *Psychoneuroendocrinology, 34*:953–967. doi: 10.1016/j.psyneuen.2009.02.010.

Hale, A., Holditch-Davis, D., D'Auria, J., & Shandor Miles, M. (1999). The usefulness of an assessment of emotional involvement of HIV-positive mothers and their infants. *Journal of Pediatric Health Care, 13*, 230-236.

Hall, T. L., & Diaz, S. (1971). Social security and health care patterns in Chile. *International journal of health services, 1*(4), 362-377.

Harms, T., Clifford, R. M., & Cryer, D. (1980). *Early Childhood Environment Rating Scale.* New York: Teachers College Press.

Harms, T., Clifford, R. M., & Cryer, D. (1998). *Early Childhood Environment Rating Scale- Revised*. New York: Teachers College Press.

Harms, T., Cryer, D., & Clifford, R. M. (1990). *Infant/Toddler Environment Rating Scale*. New York: Teachers College Press.

Harms, T., Cryer, D., & Clifford, R. M. (2003). *Infant/Toddler Environment Rating Scale Revised.* New York: Teachers College Press.

Harms, T., Cryer, D., & Clifford, R. M. (2006). *Infant/Toddler Environment Rating Scale- Revised*. New York: Teachers College Press.

Harms, T., Jacobs, E. V., & White, D. R. (1996). *School Age Care Environment Rating Scale, SACERS.* New York: Teachers College Press and Columbia University.

Henderson, C. (1990). *The experience of trauma on mother-infant attachment in the homeostatic phase of development (DISS)* (Doctoral Dissertation). Retrieved from Virginia Henderson International Nursing Library. http://hdl.handle.net/10755/180886

Herrera, M. a. O., Mathiesen, M. a. E., Merino, J. M., & Recart, I. (2005). Learning contexts for young children in Chile: process quality assessment in preschool centres. *International Journal of Early Years Education, 13*(1), 13-27.

Hollstein, R.D., Vega, J., & Carvajal, Y. (1998). Desigualdades sociales y salud: nivel socioeconómico y mortalidad infantil en Chile, 1985-1995. [Social inequalities and health. Socioeconomic level and infant mortality in Chile in 1985-1995]. *Revista Médica de Chile, 126*(3):333-40.

Hrdy, S. (1999). *Mother Nature: A history of mothers, infants, and natural selection.* New York: Pantheon.

Ivanovic, D. M., Leiva, B. P., Perez, H. T., Inzunza, N. B., Almagia, A. F., Toro, T. D., et al. (2000). Long-term effects of severe undernutrition during the first year of life on brain development and learning in Chilean high-school graduates. *Nutrition, 16*(11-12), 1056-1063.

Ivanovic, D. M., Leiva, B. P., Pérez, H. T., Olivares, M. G., Díaz, N. S., Urrutia, M. S. C., et al. (2004a). Head size and intelligence, learning, nutritional status and brain development Head, IQ, learning, nutrition and brain. *Neuropsychologia, 42*(8), 1118-1131.

Ivanovic, D. M., Perez, H. T., Olivares, M. G., Diaz, N. S., Leyton, L. D., & Ivanovic, R. A. (2004b). Scholastic achievement: A multivariate analysis of nutritional, intellectual, socioeconomic, sociocultural, familial, and demographic variables in Chilean school-age children. *Nutrition, 20*(10), 878-889.

Ivanovic, D. M., Rodríguez, M. D. N., Pérez, H. T., Alvear, J. A., Almagia, A. F., Toro, T. D., et al. (2009). Impact of nutritional status at the onset of elementary school on academic aptitude test achievement at the end of high school in a multicausal approach. *British Journal of Nutrition, 102*(1), 142-154.

Ivanovic, D., Rodríguez, M. D. P., Pérez, H., Alvear, J., Díaz, N., Leyton, B., et al. (2008). Twelve-year follow-up study of the impact of nutritional status at the onset of elementary school on later educational situation of Chilean school-age children. *European Journal of Clinical Nutrition, 62*(1), 18-31.

Jimenez, J., & Romero, M. I. (2007). Reducing infant mortality in Chile: Success in two phases. *Health Affairs, 26*(2), 458-465.

Junta Nacional de Jardines Infantiles [JUNJI]. (n.d.). *Objetivos de Calidad* [*Quality Goals*]. Retrieved June 7, 2013, from http://www.junji.gob.cl/portal/index.php?option=com_k2&view=item&layout=item&id=1443&Itemid=159

Junta Nacional de Jardines Infantiles [JUNJI]. (n.d.). *Programa Jardin Infantil* [*Childcare Program*]. Retrieved March 19, 2014, from http://www.junji.gob.cl/Programas/Paginas/jardin-infantil.aspx

Kaempffer, A. (1977). Evolución de la salud materno infantil en Chile, 1952-1977 [Maternal child care in Chile, 1952-1957[sic]]. *Revista Médica de Chile, 105*(10), 680-686.

Kaempffer, A., & Medina, E. (1982). La Salud Infantil en Chile durante la Década de los Setenta [Children's health in chile from 1970 to 1980]. *Revista Chilena de Pediatría, 53*(5), 468-480.

Keller, H., & Otto, H. (2009). The Cultural Socialization of Emotion Regulation During Infancy. *Journal of Cross-Cultural Psychology, 40,* 996-1011. doi: 10.1177/0022022109348576

Klein Velderman, M., Bakermans-Kranenburg, M. J., Juffer, F., & Van IJzendoorn, M.H. (2006). Effects of attachment-based interventions on maternal sensitivity and infant attachment: Differential susceptibility of highly reactive infants. *Journal of Family Psychology, 20*, 266–274. doi: 10.1037/0893-3200.20.2.266

Labra, M. E. (2002). La reinvención neoliberal de la inequidad en Chile. El caso de la salud [Neoliberal reinvention of inequality in Chile: the case of the health sector]. *Cadernos de saúde pública, 18*(4), 1041-1052.

Lecannelier, F., Kimelman, M., González, L., Nuñez, C., & Hoffmann, M. (2008). Evaluación de patrones de apego en infantes durante su Segundo año en dos centros de atención de Santiago de Chile [Assessment of patterns of attachment in infants during their second year of life in two-outpatient center of Santiago de Chile]. *Revista Argentina de Clínica Psicológica, 17*(3), 197-207.

Lecannelier, F., Undurraga, V., Olivares, A. M., Rodriguez, J., Nunez, J. C., Hoffmann, M., et al. (2009). Estudio de eficacia sobre dos intervenciones basadas en el fomento del apego temprano en díadas madre-bebé provenientes de la región Metropolitana en Santiago de Chile [Outcome study about two early attachment based interventions in dyads mother-baby from Santiago de Chile]. *Revista Argentina de Clínica Psicológica, 18*(2), 143-155.

Leslie, L. A., Ettenson, R., & Cumsille, P. (2000). Selecting a child care center: What really matters to parents?. *Child & Youth Care Forum, 29,* 299-322.

LeVine, R. A., & New, R. S. (Eds.) (2008). *Anthropology and child development: A cross-cultural reader*. Oxford: Blackwell.

Little, R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association, 83*, 1198-1202.

Love, J. M., Harrison, L., Sagi-Schwartz, A., Van IJzendoorn, M. H., Ross, C., Ungerer, J. A., . . . Chazan-Cohen, R. (2003) Child care quality matters: How conclusions may vary with context. *Child Development, 74,* 1021-1033. doi: 10.1111/1467-8624.00584

Macinko, J., Guanais, F. C., & Marinho de Souza, M. (2006). Evaluation of the impact of the Family Health Program on infant mortality in Brazil, 1990-2002. *Journal of Epidemiological Community Health, 60*:13-19.

Main, M. & Cassidy, J. (1988). Categories of response to reunion with the parent at age 6: Predictable from infant attachment classifications and stable over a 1-month period. *Developmental Psychology, 24*, 415-426.

Massie, H., & Campbell, K. (1983). The Massie-Campbell scale of mother-infant attachment indicators during stress. In J. Call, E. Galenson & R. Tyson (Eds.), *Frontiers of infant psychiatry* (pp. 394-412). New York: Basic Books.

Massie, H., & Campbell, K. (1992). *The Massie-Campbell scale of mother-infant attachment indicators during stress. For use during the pediatric examination and other childcare situations*. Berkeley, CA: Instruction Guide.

McCormick, M. C., Shapiro, S., & Horn, S. D. (1979). The relationship between infant mortality rates and medical care and socio-economic variables, Chile 1960-1970. *International Journal of Epidemiology, 8*(2), 145-154.

Medina, E., & Kaempffer, A. (2007). Tendencias y características de la mortalidad chilena 1970-2003 [Trends and main features of Chilean mortality]. *Revista Médica de Chile, 135*(2), 240-250.

Medrano, P. A. (2009). *Public Day Care and Female Labor Force Participation: Evidence from Chile* (SDT 306). Retrieved from Universidad de Chile, Departamento de Economía website: http://www.econ.uchile.cl/uploads/publicacion/25d848f1-0435-9623-b20cff7a36aaa.pdf

Mesman, J., Van IJzendoorn, M. H., & Bakermans-Kranenburg, M. J. (2012). Unequal in Opportunity, Equal in Process: Parental Sensitivity Promotes Positive Child Development in Ethnic Minority Families. *Child Development Perspectives, 6,* 239-250. doi: 10.1111/j.1750-8606.2011.00223.x

Mesman, J., Van IJzendoorn, M. H., Behrens, K., Carbonell, O. A., Cárcamo, R. A., Cohen-Paraira, I., . . . Zreik, G. (2013). The Ideal Mother is a Sensitive Mother. Beliefs about Early Childhood Parenting in Mothers across the Globe. Manuscript submitted for publication.

Meza, R. S. (1991). Orphans and family disintegration in Chile - the mortality of abandoned children, 1750-1930. *Journal of Family History, 16*(3), 315-329.

Milanich, N. (2004). The Casa de Huerfanos and child circulation in late-nineteenth-century Chile. *Journal of Social History, 38*(2), 311-340.

Milanich, N.B. (2009). *Children of Fate. Childhood, Class, and the State in Chile, 1850-1930*. Durham and London: Duke University Press.

Ministerio de Educación. (2011). Decreto 53. Ministerio de Educación [Ministry of Education]. MINEDUC: Santiago, Chile Retrieved from http://www.leychile.cl/Navegar?idNorma=1025071&idVersion=2011-05-05

Ministerio de Educación. (2012a). Decreto 315. Ministerio de Educación [Ministry of Education]. MINEDUC: Santiago, Chile. Retrieved from http://www.leychile.cl/N?i=1026910&f=2012-05-18&p=

Ministerio de Educación. (2012b). Decreto 548. Ministerio de Educación [Ministry of Education]. MINEDUC: Santiago, Chile. Retrieved from http://www.leychile.cl/Navegar?idNorma=14166&idVersion=2012-07-09

Monckeberg, F., Valiente, S., & Mardones, F. (1987). Infant and preschool nutrition - economical development, versus intervention strategies - the case of Chile. *Nutrition Research, 7*(3), 327-342.

NICHD Early Child Care Research Network (1997). The effects of infant child care on infant mother attachment security: Results of the NICHD Study of Early Child Care. *Child Development, 68,* 860-879.

NICHD Early Child Care Research Network (1999). Child care and mother-child interaction in the first three years of life. *Developmental Psychology 35*, 1399-1413.

NICHD Early Child Care Research Network [NICHD ECCRN]. (1997). Child in the First year of life. *Merill-Palmer Quarterly, 43*, 340-360.

NICHD Early Child Care Research Network [NICHD ECCRN]. (2002). Child-care structure --> process --> outcome: Direct and indirect effects of child-care quality on young children's development. *Psychological Science, 13*, 199-206.

Noboa-Hidalgo, G. E., & Urzúa, S. S. (2012). The effects of participation in public child care centers: Evidence from Chile. *Journal of Human Capital, 6*, 1-34.

Olhaberry, M. (2011). Calidad de la Interacción Madre-Hijo(a), Asistencia a Salas Cuna y la Importancia de la edad de Ingreso: Estudio comparativo en familias monoparentales chilenas. *Revista Argentina de Clínica Psicológica, 20*, 161-173.

Organisation for Economic Co-operation and Development. (2012). *Education at a Glance: OECD Indicators 2012.* Data retrieved June 11, 2013 from http://www.oecd.org/edu/EAG2012%20-%20Key%20Facts%20-%20Chile.pdf

Pederson, D. R., Moran, G., & Bento, S. (1999). *Manual Maternal Behaviour Q-sort Version 3.1.* Retrieved from http://ir.lib.uwo.ca/cgi/viewcontent.cgi?article=1000&context=psychologypub

Peisner-Feinberg, E. S., & Burchinal, M. R. (1997). Relations between preschool children's child-care experiences and concurrent development: The Cost, Quality, and Outcome Study. *Merrill-Palmer Quarterly, 43*, 451-477.

Pierrehumbert, B., Santelices, M. P., Ibanez, M., Alberdi, M., Ongari, B., Roskam, I., et al. (2009). Gender and attachment representations in the preschool years comparisons between five countries. *Journal of Cross-Cultural Psychology, 40*(4), 543-566.

Prieto, M., & Scott, R. (1986). Preschool learning profiles of poor and middle-class chilean children. *Journal of Social Psychology, 126*(3), 381-388.

Quezada, V., & Santelices, M. P. (2010). Apego y psicopatología materna: relación con el estilo de apego del bebé al año de vida [Attachment and mother's psychopathology: relation with baby attachment style in the first year of life]. *Revista Latinoamericana de Psicología, 42*(1), 53-61.

Ransel, D.L. (1988). *Mothers of misery: Child abandonment in Russia*. Princeton: Princeton University Press.

Ray, L. (2007). *Language of the land: The Mapuche in Argentina and Chile*. Copenhagen: International Work Group for Indigenous Affairs (IWGIA).

Riley, P. (1956). The health officer and health education: functions of health educators. *American Journal of Public Health, 42*, 679-686.

Rocha, A. B., & Bhering, E. (2006). Um estudo sobre creches como ambiente de desenvolvimento. [A study on day-care centers as development context]. *Cadernos de Pesquisa, 36*, 573-596.

Rodríguez, S., Lira, M. I., & Montenegro, H. (1975). Programa de estimulación precoz para niños de nivel socio-económico bajo, entre 0 y 2 años. Plan piloto [Early stimulation program for children in low socioeconomic stratum - pilot plan for zero to 2-year-old group]. *Revista Latinoamericana de Psicología, 7*(2), 327-332.

Rojas, J. (2010). *Historia de la Infancia en el Chile Republicano, 1810-2010* [*History of Childhood in Republican Chile, 1810-2010*]. 2nd ed. Chile: Ocho Libros Editores.

Rose, K. K., Vittrup, B., & Leveridge, T. (2013). Parental decision making about technology and quality in child care programs. *Child and Youth Care Forum, 42*, 475-488. doi: 10.1007/s10566-013-9214-1

Rosselot, J. (1982). Salud infantil en Chile y el rol de la colaboración internacional [Child health in Chile and the role of the international collaboration]. *Revista Chilena de Pediatría, 53*(5), 481-490.

Rubin, D. B. (1986). Basic ideas for multiple imputation. *Survey Methodology, 12*, 37-47.

Sadler, M., & Obach, A. (2006). *Pautas de crianza mapuche. Estudio Significaciones, actitudes y prácticas de familias mapuches en relación a la crianza y cuidado infantil de los niños y niñas desde la gestación hasta los cinco años*. Chile: CIEG, Universidad de Chile y CIGES, Universidad de La Frontera.

Sanhueza, A. D. (2006). Psychomotor development, environmental stimulation, and socio-economic level of preschoolers in Temuco, Chile. *Pediatric Physical Therapy, 18*,141-7. doi: 10.1097/01.pep.0000223103.69720.33

Santelices, M. P., Guzmán, M., Aracena, M., Farkas, C., Armijo, I., Pérez-Salas, C. P., Borghini, A. (2011). Promoting secure attachment: evaluation of the effectiveness of an early intervention pilot programme with mother-infant dyads in Santiago, Chile. *Child Care Health and Development, 37*(2), 203-210.

Santelices, M. P., Olhaberry, M., Araneda, M. E., Tapia, C., & Perez-Salas, C. P. (2007). Estudio de l evolución de las representaciones y apego materno, en un grupo de embarazadas primigestas chilenas [A study of evolving representations and maternal attachment in a group of chilean first-time pregnant women]. *Revista Argentina de Clínica Psicológica, 16*(3), 219-229.

Santelices, M. P., Olhaberry, M., Perez-Salas, C. P., & Carvacho, C. (2010). Comparative study of early interactions in mother-child dyads and care centre staff-child within the context of Chilean crèches. *Child Care Health and Development, 36*(2), 255-264.

Saracostti, M. (2010). Constructing Chile's social protection system: From early childhood to old age. *International Social Work, 53*(4), 568-574.

Scheper-Hughes, N. (1992). *Death Without Weeping. The violence of everyday life in Brazil.* Berkeley: University of California Press.

Schonhaut, B. (2010). "Profilaxia del Abandono": Cien años de protección de la infancia en Chile [Profylaxis of abandonment: One hundred years of children protection in Chile]. *Revista Chilena de Pediatría, 81*(4), 304-312.

Seguel, X., Edwards, M., Hurtado, M., Bañados, J., Covarrubias, M., Wormald, A., . . . Sánchez, A. (2012). ¿Qué efecto tiene asistir a sala cuna y jardín infantil desde los tres meses hasta los cuatro años de edad? Estudio longitudinal en la Junta Nacional de Jardines Infantiles [What is the effect of attending nursery school between three months and four years of age? A longitudinal study in the National Preschool Association]. *Psykhe, 21,* 87-104.

Sherwood, J. (1988). *Poverty in eighteenth-century Spain: The women and children of the Inclusa*. Toronto: University of Toronto Press.

Solomon, J., & George, C. (2008). The measurement of attachment security and related constructs in infancy and early childhood. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of Attachment: Theory, Research and Clinical Applications* 2 Ed. (pp. 383-416). New York: Guilford Press.

Spiker, D., Ferguson, J., & Brooks-Gunn, J. (1993). Enhancing maternal interactive behavior and child social competence in low birth weight, premature infants. *Child Development, 64*, 754-768.

Stearns, P. (2011). *Childhood In World History* (2 ed.). New York: Routledge.

Super, C. M., & Harkness, S. (1986). The developmental niche: A conceptualization of the interface of child and culture. *International Journal of Behavioral Development, 9*, 545-570.

Super, C. M., & Harkness, S. (2002). Culture structures the environment for development. *Human Development, 45*, 270-274.

Szot, J. (2002). Mortalidad infantil e indicadores económicos en Chile: 1985-1999 [Infant mortality and socioeconomic indicators in Chile: 1985-1999]. *Revista Médica de Chile, 130*(1), 107-112.

Tietze, W., & Cryer, D. (2004). Comparisons of observed process quality in German and American infant/toddler programs. *International Journal of Early Years Education, 12*, 43-62.

Uauy, R., De Andraca, I. (1995). Human-milk and breast-feeding for optimal mental-development. *Journal of Nutrition, 125(8)*, s2278-s2280.

United Nations Educational, Scientific and Cultural Organization. (2012). *EFA global monitoring report, 2012: Expanding equitable early childhood care and education is an urgent need.* Paris: UNESCO. Retrieved from UNESCO website: http://unesdoc.unesco.org/images/0021/002160/216038E.pdf

Valdés, V., Pérez, A., Labbok, M., Pugin, E., Zambrano, I., Catalan, S. (1993). The impact of a hospital and clinic-based breast-feeding promotion program in a middle-class urban-environment. *Journal of Tropical Pediatrics, 39*, 142-151.

Valenzuela, M. (1990). Attachment in chronically underweight young-children. *Child Development, 61*(6), 1984-1996.

Valenzuela, M. (1997). Maternal sensitivity in a developing society: The context of urban poverty and infant chronic undernutrition. *Developmental Psychology, 33*(5), 845-855.

Van Buuren, S. (2007). Multiple imputation of discrete and continuous data by fully conditional specification. *Statistical Methods in Medical Research, 16*, 219-242.

Van IJzendoorn, M. H. (1990). Attachment in Surinam-Dutch families: A contribution to the cross-cultural study of attachment. *International Journal of Behavioral Development, 13*(13), 333-344. doi: 10.1177/016502549001300306

Vandell, D. B. (2004). Early child care: The known and the unknown. *Merrill-Palmer Quarterly, 50*, 387-414.

Vandell, D., Belsky, J., Burchinal, M., Steinberg, L., Vandergrift, N., & the NICHD Early Child Care Research Network. (2010). Do effects of early child care extend to age 15 years? Results from the NICHD Study of Early Child Care and Youth Development. *Child Development, 81*, 737–756. doi:10.1111/j.1467-8624.2010.01431.x

Vargas, N. A., Lopez, D., Perez, P., Zuniga, P., Toro, G., & Ciocca, P. (1995). Parental attitude and practice regarding physical punishment of school-children in Santiago de Chile. *Child Abuse & Neglect, 19*(9), 1077-1082.

Vermeer, H. J., Van IJzendoorn, M. H., De Kruif, R. E. L., Fukkink, R. G., Tavecchio, L. W. C., Riksen-Walraven, J. M. A., & Van Zeijl, J. (2008). Child care in the Netherlands: Trends in quality over the years 1995-2005. *The Journal of Genetic Psychology, 169*, 360-385.

Vermeer, H.J., & Van IJzendoorn, M.H. (2006). Children's elevated cortisol levels at daycare: A review and meta-analysis. *Early Childhood Research Quarterly, 21*: 390-401.

Victora, C. G., & Barros, F. C. (2001). Infant mortality due to perinatal causes in Brazil: trends, regional patterns and possible interventions. São Paulo Medical Journal, *119*(1): 33-42.

Viel, B. (1967). Family planning in Chile. *The Journal of Sex Research, 3*(4), 284-291.

Vilchinsky, V., Haze-Filderman, L., Leibowitz, M., Reges, O., Khaskia, A., & Mosseri, M. (2010). Spousal support and cardiac patient's distress: the moderating role of attachment orientation. *Journal of Family Psychology, 24*, 508-512. doi: 10.1037/a0020009

Villalón, M., Suzuki, E., Herrera, M., Mathiesen, M. (2002). Quality of Chilean early child-hood education from an international perspective. *International Journal of Early Years Education, 10,*49-59. doi:10.1080/09669760220114845

Waters, E. (1995). The Attachment Q-Set (version 3.0). In E. Waters, B. E. Vaughn, G. Posada, & K. Kondolkemura (Eds.), Caregiving, cultural, and cognitive perspectives on secure-base behavior and working models: New growing points of attachment theory and research. *Monographs of the Society for Research in Child Development,* 60(2-3, Serial No. 244), 234-246.

Whitebook, M., Howes, C., & Philips, D. (1990). Who cares? Child care teachers and the quality of care in America: Final report, National child care staffing study. Oakland, CA: Child Care Employee Project.

Wickes, I. G. (1953). A history of infant feeding: Part III. Eighteenth and nineteenth century. *Archives of Disease in Childhood, 28*, 332-340.

Wolf, A. W., De Andraca, I., & Lozoff, B. (2002). Maternal depression in three Latin American samples. *Social Psychiatry and Psychiatric Epidemiology, 37*(4), 169-176.

Wolfe, B. L., & Behrman, J. R. (1982). Determinants of child mortality, health, and nutrition in a developing country. *Journal of Development Economics, 11*:163-193.

World Health Organization, Health Profile. (2011) [internet]. Child mortality 1990-2011 [cited 2013 Mar 13]. Available from: http://gamapserver.who.int/gho/interactive_charts/MDG4/atlas.html

World Health Organization, Multicentre Growth Reference Study Group: WHO Child Growth Standards: Length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age: Methods and development. Geneva, World Health Organization. (2006). Retrieved from WHO website: http://www.who.int/childgrowth/standards/technical_report/en/index.html

Wright, D. B., London, K., & Field, A. P. (2011). Using bootstrap estimation and the plug-in principle for clinical psychology data. *Journal of Experimental Psychopathology,2*, 252-270. doi: 10.5127/jep.013611

Yaman, Y., Mesman, J., Van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., & Linting, M. (2010). Parenting in an Individualistic Culture with a Collectivistic Cultural Background: The Case of Turkish Immigrant Families with Toddlers in the Netherlands. *Journal of Child and Family Studies, 19*, 617-628. doi: 10.1007/s10826-009-9346-y

Samenvatting (Summary in Dutch)

De kwaliteit van de zorg voor kinderen en de toegankelijkheid ervan voor kinderen uit lagere sociaaleconomische groepen zijn indicatoren van de gezondheid en sociale balans van een land (cf. Gortmaker & Wise, 1997). Juist kinderen zijn bijzonder kwetsbaar voor armoede en slechte leefomstandigheden. Daarom vormen sociaaleconomische verschillen in kindersterfte en kinderziekten een soort spiegel; zij reflecteren de ongelijkheid in een samenleving. Zelfs in welvarende landen als de Verenigde Staten bestaan er uitgesproken verschillen tussen verschillende sociale, economische en etnische groepen en tussen diverse regio's. In dit proefschrift hebben we ons geconcentreerd op de zorg voor kinderen van 0 tot 2 jaar in Chili, met speciale aandacht voor socio-economische en etnische verschillen.

In hoofdstuk 1 werd de zorg voor kinderen in Chili bestudeerd vanuit historisch perspectief. We lieten zien dat er vier stadia in de Chileense kinderzorg te onderscheiden zijn. Tijdens het eerste stadium, dat tot ver in de negentiende eeuw duurde, was de zuigelingensterfte zeer hoog en eisten kinderziekten een hoge tol. Arme ouders stonden hun kind geregeld af aan vondelingtehuizen. Rond 1900 werden, in navolging van buitenlandse voorbeelden, de eerste pogingen gedaan de zuigelingensterfte terug te dringen door de introductie van zuigelingenbureaus. Hier werden de zuigelingen onderzocht, kregen ouders advies en werd gratis gesteriliseerde koemelk verstrekt. Enige tijd later werden de eerste pogingen gedaan de gratis gezondheidszorg uit te breiden naar oudere kinderen, hun moeders en, meer algemeen, iedereen die er behoefte aan had. Deze poging gelukte maar gedeeltelijk en tot op de dag van vandaag bestaan staatsgezondheidszorg en privégezondheidszorg naast elkaar. Niettemin nam de sterfte en ziekte onder jonge kinderen gestaag af en tegenwoordig zijn de Chileense cijfers voor sterfte en ondervoeding vergelijkbaar met die van Europa, wat niet van andere Latijns-Amerikaanse landen gezegd kan worden. Dat neemt niet weg dat er uitgesproken discrepanties tussen verschillende socio-economische en etnische groepen en tussen diverse regio's zijn blijven bestaan. Vandaar dat de eerste regering onder Bachelet in 2007 het programma *Chili Groeit Op Met Jou* (*Chile Crece Contigo*) heeft geïntroduceerd. Doel van dit programma was om zowel de socio-economische als gezondheidsomstandigheden van de meest kwetsbare groepen in de samenleving te verbeteren. Nieuw was de nadruk op het sociaal-emotioneel welzijn en de cognitieve ontwikkeling van kinderen.

In hoofdstuk 2 besteedden we aandacht aan de kwaliteit van Chileense kinderopvangcentra. Onderdeel van het *Chili Groeit Op Met Jou* programma is de gratis toegang tot kinderopvang voor kinderen uit de laagste inkomensgroepen. Het idee is dat kinderen een stimulerende en veilige omgeving zouden krijgen en dat hun ouders in staat gesteld zouden worden te werken of een opleiding te (ver)

volgen. De ouders zouden zo hun vaardigheden kunnen verbeteren en een hoger gezinsinkomen kunnen verwerven, terwijl de kinderen in sociaal-emotioneel en cognitief opzicht zouden kunnen profiteren van de omgang met andere kinderen onder professionele begeleiding. Gezien de enorme toename van het aantal kinderopvangcentra in Chili in de laatste 10 jaar bestaat er enige zorg over de kwaliteit ervan. Ons onderzoek wees echter uit dat de gemiddelde kwaliteit niet is afgenomen en dat zij vergelijkbaar is met die van de Europese kinderopvang. Bovendien kunnen relatief eenvoudige maatregelen (zoals versterkt toezicht en betere naleving van de regels) de kwaliteit van de Chileense kinderopvang nog verbeteren.

Hoofdstuk 3 is gewijd aan de validering van de Massie-Campbell Attachment During Stress Scale (ADS). De ADS wordt veel gebruikt in Chili en werd geïntroduceerd om problematische moeder-kind interacties op te speuren. Getrainde observatoren scoren het gedrag van moeder en kind onmiddellijk na het gebruikelijke fysieke onderzoek van het kind door de kinderarts wanneer het kind 4 en 12 maanden oud is. De ADS, die ook als onderdeel van *Chili Groeit Op Met Jou* geïntroduceerd werd, levert de volgende indeling van kinderen op: veilig gehecht, onveilig vermijdend gehecht en onveilig afwerend gehecht aan de moeder. De ADS-afname wordt gevolgd door een preventieve interventie bij moeders met onveilig gehechte kinderen, onafhankelijk van het type onveilige gehechtheid. In ons onderzoek wisten we aan te tonen dat de ADS een redelijk goed onderscheid maakt tussen veilig en onveilig gehechte kinderen van wie de classificatie eerder met de Strange Situation procedure was vastgesteld. Ook hangt de ADS-score samen met sensitiviteit van de moeder. Ondanks een aantal gebreken, waarvoor we een oplossing bieden, lijkt het mogelijk de ADS als een eerste screeningsinstrument te blijven gebruiken in de gezondheidszorg.

In hoofdstuk 4 hebben we aandacht besteed aan etnische verschillen in Chili. Het programma *Chili Groeit Op Met Jou* beoogt alle minderheidsgroepen te bereiken en let er zorgvuldig op dat opvoedingsadvies geformuleerd wordt op een wijze die voor de etnische doelgroep acceptabel is. Het is echter niet duidelijk in welke mate minderheden in Chili nog een verschillende opvoedingsomgeving bieden als we voor inkomen controleren. In dit hoofdstuk concentreerden we ons op de Mapuche-groep en onderzochten we of de opvoedingsomgeving die zij bieden sterkt afwijkt van die van de meerderheid van de bevolking. De conclusie was dat dit voor de door ons onderzochte steekproef niet het geval was en dat de aanwezige verschillen gedeeltelijk verklaard kunnen worden door inkomensverschillen. Dit resultaat werd getoetst aan de gegevens van een zeer uitgebreid Chileens onderzoek, het zogenaamde *Encuesta Longitudinal de la Primera Infancia* (ELPI). Deze toetsing wees uit dat de verschillen in kwaliteit van opvoedingsomgeving tussen Mapuche en niet-Mapuche zeer klein zijn en dat Mapuche-gezinnen zich vooral onderscheiden door een lager gezinsinkomen en een lagere opleiding van de moeder. Deze bevinding bevestigt de nauwe verwevenheid van etniciteit, gezinsinkomen en opleiding en doet vermoeden dat voor een verbetering van de opvoedingsomgeving terugdringing van de inkomensongelijkheid onontbeerlijk is.

In hoofdstuk 5 bespraken we een onderzoek naar de langetermijneffecten van fulltime kinderdagopvang. Het *Chili Groeit Op Met Jou* programma biedt gratis kinderopvang aan de laagste inkomensgroepen om het patroon van armoede te doorbreken. Ouders kunnen hun kind naar de crèche brengen wanneer dit 6 maanden oud is en dit voor 40 of meer uren per week. Het idee is dat zowel ouders als kinderen van een dergelijk arrangement zullen profiteren. Vanuit het gezichtspunt van de gehechtheidstheorie is het succes van een dergelijk arrangement niet verzekerd. Eerder onderzoek toonde aan dat de combinatie van arme, overbelaste ouders en voltijdse dagopvang geen gelukkige is en dat de moeder-kind gehechtheidsrelatie negatief beïnvloed kan worden. In onze studie vergeleken we de moeder-kind relatie van kinderen die een jaar lang voltijdse dagopvang hadden genoten met die van kinderen die een jaar lang thuis opgevoed werden in een groep met een laag inkomen. Tegen de verwachting in bleek dat dagopvang de moeder-kind relatie niet negatief beïnvloedde vergeleken met opvoeding thuis. Ook de kwaliteit van de thuisomgeving was niet lager. Met behulp van gegevens uit de ELPI, konden we ons resultaat bevestigen: het type zorg heeft geen effect op de kwaliteit van de thuisomgeving. Dat deze kwaliteit lijkt af te nemen in de eerste levensjaren van het kind is een fenomeen dat nog onverklaard is.

Wij hopen dat de resultaten van deze studie zullen bijdragen aan het debat over de doelen en resultaten van het *Chili Groeit Op Met Jou* programma, een van de meest ambitieuze programma's in de recente geschiedenis. Als Chili werkelijk zijn geschiedenis van ongelijkheid wil overwinnen, is de gezamenlijke inzet van zowel leken, professionals als onderzoekers een eerste vereiste.

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Curriculum Vitae

Rodrigo Cárcamo was born on August 6, 1977 in Punta Arenas, Chile. In 1993 he completed his secondary education at the Liceo de Hombres de Puerto Montt. Subsequently, he studied Psychology at the Universidad Mayor in Temuco with a specialization in Educational Psychology (1995-2001). His graduate thesis was about the differences in learning strategies of Mapuche and non-Mapuche children. Later, he finished his Master's degree in Cognitive Psychology and Learning at the Universidad Autónoma de Madrid, taken in FLACSO Argentina. In 2006 he was appointed as a Lecturer at the University of Magallanes – Chile, where, as a *Jefe de Carrera*, he was responsible for the development and implementation of the Psychology program. In March 2010, he moved to the Netherlands to start his doctoral research at the Centre for Child and Family Studies, Leiden University. Currently he is Assistant Professor in the Department of Psychology at the University of Magallanes.