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**Author:** Cárcamo Leiva, Rodrigo Alejandro  
**Title:** Childcare in Chile. The role of ethnicity and socioeconomic inequalities  
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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 & Cryer, 1990, 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 (Domínguez, 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 (Domínguez 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 preschool 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...
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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 ≤ 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 (Biscoglia, 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-

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.

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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>
<thead>
<tr>
<th></th>
<th>Process quality</th>
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<tbody>
<tr>
<td>Process quality (ITERS-R)</td>
<td>3.5</td>
<td>0.35</td>
<td>2.8 – 4.2</td>
</tr>
<tr>
<td>Structural Features</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Group size</td>
<td>13.88</td>
<td>3.64</td>
<td>6 – 19</td>
</tr>
<tr>
<td>Number of caregivers</td>
<td>4.18</td>
<td>1.19</td>
<td>2 – 7</td>
</tr>
<tr>
<td>Child-caregiver ratio</td>
<td>3.43</td>
<td>0.92</td>
<td>1.9 – 4.8</td>
</tr>
<tr>
<td>Caregiver age</td>
<td>38.06</td>
<td>8.32</td>
<td>27 – 53</td>
</tr>
<tr>
<td>Training in child development</td>
<td>0.41</td>
<td>0.50</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Experience in Infant/Toddler group</td>
<td>4.97</td>
<td>4.34</td>
<td>1 – 16</td>
</tr>
</tbody>
</table>

1 0 = no training, 1 = training in child development (attachment, sensitivity, etc). 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
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).

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 ($M = 4.0$).
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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 ($k = 20$, $N = 2052$, $M = 3.83$, $SD = 0.21$) ($t = 3.70$, $df = 27$, $p = 0.001$, $d = 1.25$).

Table 3

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

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

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

Figure 3. Childcare quality in Chile from a worldwide perspective.
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, 2008, 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, Etenson, & 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).