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Managua Orphanage Intervention Outcome Report

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EXECUTIVE SUMMARY

The intervention. This intervention in an orphanage deficient in nearly every respect in Managua, Nicaragua, emphasized one-on-one warm, caring, sensitive, and responsive caregiver-child interactions especially during routine caregiving chores (e.g., feeding, bathing/changing) plus some increased consistency of caregivers. The intervention was targeted primarily at infants and toddlers in wards that were for children under 36 months of age, and caregivers in these wards received technical assistance in implementing the training in their routine caregiving behaviors. Also, unanticipated events produced a mixed intervention for older children, many of whom were denied access to preschool services during baseline because a child wandered away from the off-site preschool facility and attendance was temporarily stopped, followed later by a return to off-site and onsite preschool and recreational activities.

Ward and caregiver changes. Pre- to post-intervention improvements in the ward environments and caregiver-child interactions reflected the nature of the intervention. Wards improved on environmental rating scales, especially with respect to listening/talking or language/reasoning and caregiver-child interaction. Further, there were more warm, caring, sensitive, responsive, and engaging caregiver-child interactions at post-intervention. Improvement was greater for caregivers serving younger children: Caregivers for younger children improved their interactions with children during all three activities (feeding, bathing/changing, free play) while caregivers for the older children improved only during the feeding episodes.

Children's development. Despite the different interventions for younger and older children and the difference in caregiver behavior produced by the intervention, general development improved similarly for younger and older children, an average increase of 13.5 DQ points. Although significance levels varied somewhat, improvement occurred over all subscales

of the Battelle. While older children started at lower developmental levels, perhaps because of a longer residency in an unstimulating orphanage plus the temporary absence of preschool activities during the pre-intervention assessment, they improved approximately the same number of DQ points as younger children who were the primary focus of the intervention. The intervention seemed to improve the lowest scoring children most. While the statistical evidence was somewhat inconsistent, children who made a transition from the younger to the older wards during the course of the study improved less than children who remained in younger or in older wards.

Conclusions. Under the direction of Whole Child International, this project demonstrates that a social-emotional intervention can be successfully implemented in an orphanage that is deficient in every respect using regular staff. Several unanticipated events occurred and lessons were learned regarding intervention implementation that can benefit subsequent interventions.

The study joins a few others that have demonstrated that a primarily social-emotional intervention emphasizing warm, sensitive, responsible caregiver-child interactions without altering medical care, nutrition, sanitation, and other aspects can produce improvements in children's development. As such, the study suggests that the lack of such caregiver-child interactions may be a major corroding aspect of may orphanage environments.

Managua Orphanage Intervention Outcome Report[1]

In 2006, Whole Child International, a nonprofit organization whose primary aim is to improve orphanages in developing countries, targeted an orphanage in Managua, Nicaragua, to receive training and certain structural changes that would increase consistency of caregivers and improve caregiver-child interactions that would in turn improve the development of resident children birth to approximately 8 years of age. In preparation for evaluating the effectiveness of these interventions, pre-intervention characteristics of the wards in the orphanage, caregiver-child behavior, and children's developmental status were assessed. A report of these data and reliability information on the coding of these assessments is given in a previous report (Groark,

[1] The intervention and evaluation reported here was funded by Whole Child International, Karen Gordon, President. The intervention was created and implemented by Whole Child International with the help of WestEd, and the evaluation was conducted independently by the University of Pittsburgh Office of Child Development.

McCall, and the Whole Child International Evaluation Team, 2007).The intervention began in the fall of 2006 and was completed in the fall of 2007. Outcome assessments were conducted in the spring of 2008, the results of which are described in this report. A detailed technical report is contained in Appendix I.

This report contains a brief description of the reliability and pre-intervention results, a description of the intervention, a report on the pre- vs. post-intervention results for each of the three measures assessed, and a short discussion and interpretation of these findings.

SUMMARY OF RELIABILITY AND PRE-INTERVENTION ASSESSMENTS

Details of the reliability and pre-intervention assessments are given in Groark, McCall, and the Whole Child International Evaluation Team, 2007.

Three kinds of assessments were conducted. The general environment of the wards where children resided was reflected in the Infant-Toddler Environmental Rating Scale (ITERS; Harms, Cryer, & Clifford, 2006) and the Early Childhood Environment Rating Scale (ECERS; Harms, Clifford, & Cryer, 2005). These scales are among the most widely used instruments to assess the general physical and behavioral characteristics of early childhood care and education settings. The nature of caregiver-child interactions, especially their warmth, sensitivity, responsivity, and mutual engagement, was assessed with the Caregiver-Child Social/Emotional/Relationship Rating Scale (CCSERRS) which was recently developed (McCall, Groark, & Fish, in press) to assess caregiver-child interactions particularly in the orphanage context. Finally, children's general behavioral development was assessed with the Spanish Language version of the Battelle Developmental Inventory (Newborg, 2005), which is designed to assess the personal-social, motor, adaptation, communication, and cognitive performance of children birth-96 months of age.

The Infant-Toddler and Early Childhood Environmental Rating Scales

The pre-intervention assessments using the Infant-Toddler Environmental Rating Scale (ITERS) for wards containing children younger than approximately two years of age and the Early Childhood Environmental Rating Scale (ECERS) for wards containing older children were conducted by a single individual who was trained by a highly experienced administrator of these scales. Two years later, after the intervention had been completed, the original assessor had left the project and the expert who trained the original assessor came to Managua to conduct these assessments at post-intervention.

Reliability

Since there were only seven wards in the orphanage, conventional reliability could not be calculated. However, the expert assessor trained not only the pre-intervention assessor but he later trained another assessor, and both of them scored each ward at post-intervention. While only the data from the expert assessor is used in this report, the two assessors correlated .74 across all subscale ratings over the seven wards.

Pre-Intervention Results

Generally, the orphanage environment was physically and behaviorally austere, spartan, even stark in its barrenness. On these commonly used scales that rate the general environment of early care facilities, the wards at this orphanage scored at the lowest possible levels in nearly every domain.

The ITERS/ECERS are very similar assessments, one for the environments of younger and the other of older children, which yield a Total Score between 1 and 7 (best) and which also provide scores of 1-7 for 7 subscales, including Space and Furnishings, Personal Care Routines, Listening, Talking/Language-Reasoning, Activities, Interaction, Program Structure, and Staff. The average pre-intervention Total Score was 1.16, barely more than the minimum score of 1. Scores for the 7 subscales ranged between 1.0 (for 3 out of the 7 subscales) to 1.58. By way of comparison, random samples of non-residential early care and education centers in the State of Pennsylvania (USA) in 2002 averaged 3.9 (Fiene et al., 2006).

The Caregiver-Child Social/Emotional/Relationship Rating Scale (CCSERRS)

The CCSERRS was designed especially to rate the warmth, sensitivity, responsivity, and mutuality of caregiver-child interactions in the orphanage context (McCall et al., in press). It contains 18 items that are rated on a 4-point scale (0-3 in which 3 is best) and then averaged to give a total rating.

Reliability

There were five coders who were trained to conduct the CCSERRS ratings at pre-intervention, and they were paired with each other to provide reliability information. They observed an individual caregiver for two 5-minute episodes using different children within each of three kinds of activities, including feeding, dressing/bathing, and free play. Ideally, then, each caregiver was observed for 30 minutes, and a score was produced for each of the three activities and the total.

The five coders who were paired with each other were able to score the CCSERRS reliably. Over all 18 items in the 10 pairs of coders, the coders were in perfect agreement on 60% of the items and within one point on 91%, and these figures were roughly similar for each of the three activities. Over all ratings of all caregivers during the pre-intervention phase, 38% of the differences between all ratings was associated with differences between caregivers, 8% with differences between activities, and only 1% with differences in coders.

Pre-Intervention Results

The average Total Score over all 40 caregivers was 1.16, and Total Scores for all 40 caregivers ranged between .44 and 2.15, while a maximum score is 3.0. These figures are quite similar to those found for only a single 5-minute observation of free play in orphanages in St. Petersburg, Russian Federation. The CCSERRS scores were similar for caregivers serving younger vs. older children, and they were only slightly lower for the feeding activity than for bathing/dressing and free play. The same five coders performed the post-intervention assessments.

Battelle Developmental Inventory

The Battelle Developmental Inventory (Newborg, 2005) is a widely used assessment of general behavioral development that provides a Total Score and scores for the five subscales of Personal-Social, Motor, Adaptation, Communication, and Cognition. The most commonly used form of these scores is a Developmental Quotient (DQ), which is roughly similar to an IQ score because it represents the accomplishment of the child relative to the child's age and this ratio is multiplied by 100. The average USA parent-reared child scores a DQ=100 (standard deviation = 15).

Reliability

Ten children of varying ages between 2 and 64 months were each assessed simultaneously by three coders prior to the intervention. In each case, one coder administered the assessment, and all three scored the child's performance independently of the others. Each coder was the test administrator for three or four of the ten children.

The three coders agreed with each other to a very substantial degree. A Coefficient of Concordance can be calculated with a maximum of 1.0 reflecting perfect agreement among the three coders. For the Total Score, this Coefficient of Concordance was .99, and it ranged from .95 to .99 for four of the five subscales (only Communication was lower at .75).

Pre-Intervention Results

The average children's Total DQ was 63.93, which is very low. In fact, fewer than 1% of USA parent-reared children would have a DQ this low or lower. On the subscales, DQs ranged between 62.81 and 77.55, which would rank below the 8^{th} percentile, except for motor development which was at the 12^{th} percentile. Performance was lowest on the Communication subscale, and older children scored more poorly than younger children, perhaps as a result of having lived in the unstimulating orphanage for a longer period of time.

THE INTERVENTION PROCEDURE[2]

The content of training and technical assistance that constituted the intervention reflected best practices in group care of children, particularly the zero to three population. The bulk of training materials and activities were drawn from the WestEd Program for Infant-Toddler Care (Gonzalez-Mena, 2005; Lally, 1990; Lally, Mangione, & Young-Holt, 1992) and the Pikler Institute of Budapest, Hungary (Tardos, 2007). Both approaches share an emphasis on respectful, responsive caregiving.

General Principles

Four major principles guided the training: 1) Caregiving routines are an important time for interaction between adult and child; 2) continuity of care is particularly important for children in institutions; 3) children need freedom of movement to grow and learn; and 4) plentiful, safe, and developmentally appropriate materials must be accessible to children during their waking hours. Particular issues emphasized within each principle were:

1) Caregiving routines: Each child should receive individual attention during the caregiving routines of bathing, dressing, and feeding. Adults should describe to children of all ages the child's experience at the moment and what they are about to do. A predictable sequence of caretaking to individual children is scheduled so that over time children learn their place in the order of care (e.g., "Juan is bathed after Lucita").
2) Continuity of care: Children need a minimum number of caregivers who interact with them on a regular basis. A goal was to maintain the same caregivers for reduced groups of 9 children, and part-time volunteers were discouraged from providing direct care to children.
3) Freedom of movement: Children need ample, safe places in which to move and explore, primarily on their own and without adult demonstrations, coaching, or encouragement. Non-mobile infants should spend their waking hours in large enclosed spaces rather than in cribs.
4) Developmentally appropriate materials: The caregivers focus adult-child interactions during caregiving routines on a single child at a time, so that each child receives

[2] This chapter written by Diane Harkins and Gabriela Serrano, Whole Child International.

individualized, uninterrupted attention. At the same time, the other children in the room need safe, plentiful play materials to engage their interest and attention in uninterrupted time for exploration and play alone while the adult interacts with a particular child in the caregiving routine.

Additional training topics included following the child's attention and interest, promoting language development, the use of observation, caregiver self-reflection, attachment, early brain development, and adapting to the child's temperament.

Training

Preliminaries

The core team for Whole Child International included Karen Gordon (Executive Director), Diane Harkins (Program Director), and Gabriela Serrano (Central American Coordinator). Three members of the orphanage team of Centro de Proteccion Divino Niño (DN; i.e., the Director, Pedagogue, Social Worker) accompanied by the Whole Child Team, a representative from UNICEF in Nicaragua, and a Nicaraguan government official visited the Pikler Institute for 5 days of observation, discussions with Pikler staff, and training with the Whole Child staff. On the last day, the DN team and the Whole Child staff developed some initial goals, and subsequently, the DN team agreed to four structural and behavioral goals for revising the orphanage: 1) reduce group size, 2) establish continuity of care, 3) develop more responsive caregiving practices, and 4) improve the physical environment.

Training and Technical Assistance

Trainers. Whole Child International contracted with WestEd, Center for Child and Family Studies, for training and technical assistance services. Under the supervision of Janet Poole, WestEd Program Director, two WestEd staff members, Edilma Serna and Consuelo Espinosa (both bilingual and bicultural), became the primary trainers for the project. A "commuter" model of training and technical assistance was established. Along with Whole Child's Diane Harkins and Gabriela Serrano, the training team worked in Managua one week per month for 12 months, from November 2006 to October 2007. In addition to training, technical assistance included strategic planning meetings, site observations, and coaching of caregivers.

Trainees. Essentially all staff of the entire orphanage, all educadoras (caregivers), colaboradoras (ward housekeeping staff), infirmary staff, day and night supervisors, and all technical team members (Director, Pedagogue, Social Worker, Psychologist, Pediatrician, Head Nurse, Physical Therapist) were trained. Some trainings also included kitchen staff at their request. Although the material shared in training focused on children birth to three, staff of all wards (serving children up to 8 years of age) attended the training. Due to the nature of shift work, staff were divided into three teams so that everyone had the opportunity to attend training on their day off. In addition, some representatives from other community agencies as well as faculty from Universidad Centroamericana participated in the training.

Weekly schedule. In general, each week's schedule of training staff was set up according to Table 1.

Training topics. Topics addressed each month in training plus the technical assistance schedule is given in Table 2.

Technical Assistance

It became clear after the first few months that a stronger emphasis on technical assistance was needed. Although the caregivers readily participated in the monthly trainings, their ability to incorporate new knowledge and skills into their daily repertoire moved more slowly.

Consequently, the trainers shifted their schedules to offer technical assistance for 5 days some months, foregoing the formal training sessions. To improve the transfer of learning, the social worker and the psychologist of the orphanage were asked to become mentors to staff as they implemented change in the program. This model of mentorship was not implemented consistently or successfully; staff often complained of receiving conflicting directives from mentors and their formal supervisors.

Although the Orphanage Technical Team requested technical assistance for all of the original wards, three factors influenced the final plan to focus only on wards serving the younger children: 1) Both the Pikler and WestEd training models focus on children zero to three, 2) the trainers only had time during their one week per month to provide technical assistance to a few wards, and 3) the Team recognized the special need for behavioral and mental health interventions for older children but did not have the time of expertise to address them. As a result, Whole Child and WestEd decided to focus most of the TA work on the pilot and four other wards for infants and toddlers—lactantes menores, lactantes mayores, infantes, and the

Table 1. Typical Weekly Schedule of Training and Technical Assistance

Monday:
Meet with Divino Nino's Technical Team (Director, Pedagogue, Social Worker, Psychologist, Pediatrician, Head Nurse, and Physical Therapist) to develop an action plan for implementing the core principles, assess progress to date, and review the week's scheduled activities (3 hours)

Tuesday:
Train Group One (6 hours)

Wednesday:
Train Group Two (6 hours)

Thursday:
Train Group Three (6 hours)

Friday:

1) Observe wards and provide technical assistance, primarily focused on the wards serving younger children (e.g., Lactantes menores, Lactantes mayores, Infantes, and the Infirmary(3 hours). Once the pilot ward opened in June 2007, it also became the focus of TA efforts.

2) Meet with technical team to share observations and suggestions (1 hour)

Table 2. Training and Technical Assistance Schedule and Topics

November 13-17, 2006

- Get acquainted activities
- Developmental milestones of children ages zero to three, including brain development
- Overview of relationship-based, responsive, and respectful caregiving
- Experiential activities focused on respectful routines
- Self-reflection: How our own childhood experiences can influence our caregiving

December 4-8, 2006

- Relationship-based, responsive, and respectful caregiving
- The Program for Infant Toddler Care responsive process of Watch-Ask-Adapt
- Experiential activities focused on respectful care while dressing children

January 15-19, 2007

- Relationship-based, responsive, and respectful caregiving
- The role of self-reflection in providing responsive care, "professional" love
- Experiential activities focused on respectful care while diapering children

February 12-16, 2007

- Understanding children's temperament

- Introduction of developmentally appropriate play materials
- Experiential activities focused on respectful care while bathing children

March 12-16, 2007

- Technical assistance only (approximately 15 hours of TA in wards, 5 hours of meetings with technical team)

April 16-20, 2007

- Primary caregiving in institutions
- Continuity of care in institutions
- Experiential activities focusing on responsive caregiving during feeding routine
- Introduction of the planned pilot ward

May 20-23, 2007

- Training with technical team and pilot ward staff only, including discussion of the vision, program philosophy, the new work schedule, and the value of free play
- Technical assistance primarily focused on preparing the pilot ward

June 6-9, 2007

- Technical Assistance only with a focus on the implementation of responsive caregiving practices and the adoption of a sequence in the children's routines; 8 children moved into the pilot ward

June 11-15, 2007

- Cognitive and language development in young children; universal precautions (particularly hand washing); and the sharing of childhood stories, songs, and rhymes

July 8-12, 2007

- Technical assistance only, with a focus on the environment and responsive routines

August 5-9, 2007

- Technical assistance only, with a focus on responsive routines, play materials in the environment, and the role of the aide (colaboradora) in supporting the caregiver (educadoras) during routines

September 2007

- Training and technical assistance by Whole Child only with a focus on observation of wards and written recommendations to the director and technical team; team did not coach individual caregivers

October 15-19, 2007

- Observation of young children
- Documentation, including the use of photos, keeping children's diaries, and note-taking
- Adapting the environment and play materials
- The stages of play in young children
- Closing celebration

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infirmary. Nevertheless, the WestEd trainers did some observation and made concrete suggestions for the caregivers serving older children, and a new orphanage director hired in January 2007 led the effort to provide more age-appropriate activities for them.

Interventions in Specific Wards

Implementation of various procedures occurred at different times in different wards, which is summarized in Table 3.

Pilot Ward

Partly to accommodate a sudden influx of infants, the Orphanage Technical Team in collaboration with the Whole Child and WestEd teams, opened a new pilot ward in one of the unused buildings on the property. The pilot ward opened in June 2007 with eight children between the ages of 3 and 15 months and was the first to implement the four principles described above and below on a small scale before implementing these changes in the other wards throughout the orphanage.

Specifically, prior to any interventions, staff tended to work 12-hour shifts followed by 2-3 days off, and staff were rotated to care for different wards as frequently as every 2-3 months. To promote continuity of care by fewer caregivers, four caregivers from the preschool-age wards became the first caregivers of the pilot ward, and each worked an 8-hour shift approximately five days per week. Although each caregiver worked alone during her shift,
the housekeeper aide assigned to that group assisted with feeding and diapering routines. It was decided that the orphanage social worker would act as mentor to the group, although it continued to have a separate night supervisor.

The WestEd trainers assisted the pilot staff in developing a sequence of routines that emphasized predictability for the children. A poster with the order of bathing and feeding individual children was posted in the feeding area of the ward. In general, the sequence began with the youngest child and proceeded to the oldest child. This procedure was intended to help

Table 3 Intervention Timeline

Date	Assessments	Training	WARD (Hogar)					Pre-esolar A and D	Pre-esolar B and C
			Pilot	Infantes	Lactantes Menores	Lactantes Mayores	Infirmary		
Aug. 2006	Pre-intervention								
Sept.	↕								
Oct.									
Nov.		Train all staff							
Dec.		↕			Start Own toy (pañvelito),	Start Own toy (pañvelito),			
Jan. 2007									
Feb.					Pikler Table ↕	Pikler Table ↕			Return to offsite preschool
March				Start Bath tub					
April				Bath sequence. Shelves for toys	Caregiving Sequence	Caregiving Sequence		On-site preschool	
May				↕	↕	↕			Swimming Soccer
June			Start new schedules, caregiving sequences, additional materials, and furniture. Transport provided						↕
July			↕						
August									
Sept.									
October				New staff schedules	New staff schedules. Transportation	New staff schedules. Transportation	Play space increased		
Nov.				↕					
Dec.									Arts & Crafts
Jan. 2008	Post-intervention assessments								
Feb.	↕			Transportation					
March									
April									
May									
June									

children anticipate regular, positive contact with the caregiver. Children were fed consistently in the caregiver's lap until they could comfortably sit alone.

Freedom of movement was promoted by stocking the ward with developmentally appropriate materials and some additional furniture. Bookcases were added, with the additional play materials at the children's level, including stacking cups, bowls, dolls, small plastic balls, etc. Infants were placed on the floor of the main room, with gates preventing them from entering the bedrooms, feeding area, and storage spaces. Younger infants spent daytime hours in a large enclosed space called a "ring;" softer materials were placed in the ring for their use. Two Pikler changing tables were placed in the ward, as well as a more comfortable chair for feeding infants. Older infants were fed in the caregivers' arms while the caregiver sat at a table.

Children spent very little time outdoors for the first several months because of a lack of safe, supervised spaces adjacent to the ward. As children began to walk, staff from the technical team would take them for walks on the property, usually on a daily basis, but they had very little free play time outdoors.

Wards for Infants and Toddlers

Staff schedules. Changes to the environments of the infant/toddler wards occurred slowly over several months, and responsive routines were implemented somewhat sporadically, often due to the interest and volition of particular caregivers. The new staff schedules using four caregivers were implemented only in wards for younger children.

Group size. While the Orphanage Technical Team established the goal of limiting group size to a maximum of nine children, pressures from the Ministry of the Family to accept more children prevented achieving this goal, even in the pilot ward. As a result, group sizes actually remained between 8 and 14.

Lactantes Menores and Mayores. Lactantes menores and mayores shared the same building, so changes often were made simultaneously in both groups.

In December 2006, the trainers introduced the use of the "pañuelito", a soft flannel cloth that could be used as the young infant's first toy. Eventually, children's names were put on the pañuelitos so that each child had his/her own. In addition, a Pikler-style changing table was introduced to the Lactantes in January 2007. Because the ward was divided into two main living areas, a flat table continued to be used for changing in one of the rooms.

A sequence for feeding and bathing routines was established in April 2007.Over the first few months of technical assistance, the staff began to feed children in their laps. High chairs, previously used for feeding, were removed in April 2007. The housekeeper on each shift began to assist during the feeding routine, allowing the primary caregivers to have more concentrated time with each child. Caregivers began to offer children choices about what to wear (usually a choice between two items). Stuffed animals that had previously hung from the ceiling were removed, with more objects available within children's reach.

Infantes. The new staff schedule was not implemented in the Infantes ward until February 2008, and early morning and night staff received transportation assistance. Previous to that, Infantes received some technical assistance, although not on a monthly basis. One of the trainers began introducing some play materials for infantes in January 2007, in March 2007 a bathing tub was provided to help individualize the bathing routines, and in April 2007 the sequence of children for the bathing routine was implemented and shelves were placed in the ward, allowing children to reach toys without adult assistance.

Infirmary. In October 2007 the infirmary was given a ring (enclosed play space) to put on the porch outside so that children could play there. The infirmary staff rearranged the main room so there was more space for children to play outside the cribs. More toys were provided within children's access. Because the infirmary is for sick children as well as for children new to the orphanage, new staff schedules and caregiving sequences were not implemented there.

Pre-escolar A – D. The children in Pre-escolar B and C had been removed from an off-site preschool a few months before the project began because an orphanage child walked off school property and became temporarily lost. For a year, the children stayed on the orphanage property, received some schooling, but spent the majority of their waking hours in free play – with limited play materials and equipment. In February 2007, the children returned to school off-site. Pre-escolar A and D children were too young for preschool, and stayed in the orphanage full time. But in the spring of 2007, a preschool program opened on the orphanage site and children from Pre-escolar A and D attended the program 2 - 3 hours per day.

Children in Pre-escolar B and C started swimming for 2 hrs. each day Monday- Friday and soccer for 3 hrs. each Saturday beginning in May 2007, and some children started arts and crafts for an hour 5 days per week in December 2007. These activities are summarized in Table 4.

Table 4. Extracurricular Activities for Preschool-Aged Children

Swimming
Start date: May 2007
Wards: Pre-C and Pre-B
Frequency: Monday - Friday 2 hours each day.
Place: Barracudas, belongs to the Military of Nicaragua

Soccer
Start date: May 2007
Wards: Pre-C and Pre-B
Frequency: Saturdays 8AM-11AM
Place: La Meca del fútbol, private

PS: Currently they are not attending the extra curricular activities due to the strong winds and those providing these services are organizing things for this year, it is a voluntary activity.

Arts & Crafts
Start Date: December 2007
Wards: Pre-C (5 children) and Pre- B (6 children)
Frequency: Monday – Friday for approximately an hour
Place: Playroom

Note: The wards A, D and Infantes take advantage of the trip to go to a park close to where the other children are. One group leaves at a time.

Ages of children in each of the wards
Infirmary: 0 months on, for adaptation
Lactante I y II: 0 months to 18 months
Infantes: 18 months to 2 ½ years
Preescolar A: 3
Preescolar B: 5 years on
Preescolar C: 5 on
Preescolar D: 4 years and 5 years

Caregiver Incentives and Support

Whole Child International provided a 20% cash supplement for staff working directly with the children (caregivers, aides, infirmary staff, and night supervisors) to bring their salaries to the levels of other orphanages and minimize staff turnover. This supplement was distributed every three months after March 2007.

Changing the staff schedules was initially met with resistance, because caregivers were concerned about safety on the streets in the early morning and late evening hours. As a result, Whole Child agreed to provide transportation beginning in June 2007 for staff entering the pilot ward at 6:00 a.m. and those leaving the pilot at 9:00 p.m. In October 2007, this transportation assistance was extended to staff from Lactantes when they moved to the new schedule, and in February 2008 to caregivers in Infantes.

Aides. One of the obstacles to involving the aides (colaboradoras) in caregiving routines was the large amount of time they spent washing children's diapers, clothes, towels, etc. by hand. Whole Child agreed to provide a washing machine for the pilot ward, thus freeing up some of the aides' time for caregiving. The washing machine was installed shortly after the pilot ward opened. Interestingly, the lack of a washing machine did not seem to be an obstacle in Lactantes Menores and Mayores. There, the aides began to assist with routines despite having to wash clothes by hand.

Use of Volunteers. The Whole Child staff was not able to specifically track the use of volunteers through the course of the project. On several occasions, staff and the orphanage technical team discussed eliminating the caregiving role of volunteers, particularly for the youngest children, to emphasize the caregivers and continuity of care. The pilot ward made the most advances in this direction – signs were posted on the door instructing volunteers to enter the building through the back so that they did not disturb the children in the main room, and Whole Child staff did not observe outside volunteers during their visits. However, high school students were often seen in the other wards working directly with infants and older children.

PRE- VS. POST-INTERVENTION RESULTS

The results of comparing pre-intervention vs. post-intervention scores on the three assessments are presented in this chapter. The post-intervention assessments were conducted in the spring of 2008, at least four months after the interventions were completely implemented, longer in some wards. The assessments were conducted on three wards containing children under approximately 36 months of age and four wards of older children, and they were made on all

caregivers (but not aides) and all children in residence in these wards. Notice there could be new caregivers who did not receive the entire training and there could be children who recently arrived and were not exposed to the entire 4+ months of the completed intervention. To the extent that these circumstances occurred, the benefit of the intervention would be reduced.

Results for General Ward Environment

Wards for both younger and older children scored higher at post-intervention.

Total Scores

The mean ITERS in the younger groups rose from 1.21 to 1.83, the mean for the older wards increased from 1.14 to 1.83, and all six groups individually improved over their pre-intervention assessments ($p < .02$).

Subscale Scores

Improvement was concentrated predominately on certain subscales of the ITERS/ECERS, which tended to correspond to the nature of the intervention. Figure 1 presents subscale scores for the younger and older wards at pre- and post-intervention. The small number of wards precluded statistical analyses, but it is clear that the larger improvements were made on the Listening/Talking or Language/Reasoning subscale (mainly the individual items of Helping Children Understand Language, Using Language to Develop Reasoning Skills, and Informal Use of Language), the Interaction subscale (mainly the individual items of Discipline, Staff-Child Interactions, and Peer Interactions), and the Staff subscale (because all staff had received training). Minimum improvements were made on Space and Furnishings (except the youngest groups because of the addition of the Pikler changing tables and bookcases to hold toys), Personal Care, Activities, and Program Structure.