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# The effect of caregiver training on time-use of children living in residential care facilities

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# 3. Chapter Three: Methodology

## 3.1. Study Design

A quasi-experimental static group comparison study with a cross-sectional design was used. A quasi-experimental study static group comparison design compares two groups to each other to look for differences in the independent variable, but instead of using randomization to assign participants to the different groups, groups already in existence are used. This type of study design is often used in conjunction with a cross-sectional design where measurements are taken only once at one particular point in time and when the independent variable occurred in the past before the research was embarked upon (40).

The main aim of the study was to investigate whether caregiver training at residential care facilities changed time-use patterns of the infants and toddlers living in these facilities and whether training influenced the temporal and social context related to those time-use patterns. The study also aimed to describe other demographic factors, such as ratio of caregivers to infants and toddlers, caregiver age and caregiver level of education, which may have had an effect on the success of caregiver training.

This study only evaluated the caregiver training programme after it had been designed and implemented at three residential care facilities. Therefore different groups on whom the time use evaluations were to be done already existed before this study started: namely a group of infants and toddlers that lived in residential care facilities where their caregivers had already received training and a group of infants and toddlers living in facilities where their caregivers had not yet received training. This study made once-off observations of these two groups of infants and toddlers a

short time after the caregiver training had taken place in order to compare their time-use patterns.

A quasi-experimental, cross-sectional study design falls within the category of plausibility studies described by Habicht et al. (1999) (18). Plausibility studies try to determine whether an intervention is showing potential for effectiveness before a full-scale probability study is undertaken. This can be for logistical and financial reasons (18). This is also the research study design that Tirella et al. (2008) used for their study (2). This research was designed to study the impact of a specific intervention programme (i.e. the caregiver training programme developed by Thusanani Children's Foundation) in order to determine whether the desired change in terms of the temporal and social contexts within the target population (i.e. the children living in residential care facilities and their caregivers) had occurred. This study design was considered the best for this research as the main focus was programme evaluation rather than programme development and because the researcher was not involved in the designing or implementation of the programme (18). The researcher designed a once off comparative study to investigate whether the training programme showed the potential to change interactions between caregivers and children. If the results of this study were favourable, a more sustained and detailed way of evaluating the training programme would be considered.

## 3.2. Study Sample

### 3.2.1. Residential Care Facility Population

The population of residential care facilities in this study consisted of all facilities situated within the greater Johannesburg area, Gauteng, South Africa, where caregiver training by Thusanani Children's Foundation had taken place.

#### *3.2.1.1 Sample of Residential Care Facilities:*

At the time of the study, caregiver training had only taken place at three residential care facilities in Johannesburg. Therefore the total population of residential care facilities where caregiver training had occurred was used. Matched sampling was used for selecting residential care facilities where caregiver training had not taken place. The residential care facilities where caregiver training had taken place were matched with three similar facilities that were receiving services at the BigShoes/Thusanani Children's Foundation Adoption Clinic, but had not received any specific caregiver training or on site intervention from the foundation. The facilities were matched according to the size of facility, availability of funding and resources, and type of facility.

The criteria used to match the facilities were:

- ***The size of the facility:*** This was determined by the number of children resident in the facility. A facility was classified as "small" if it had a total capacity to house twelve or less children, "medium" if it had a total capacity to house between twelve and eighteen children and "large" if it had a total capacity to house more than eighteen children at any one time.

- ***The availability of funding and resources:*** Government subsidies and private funding were the two main categories examined under availability of funding and resources. Government subsidies are offered to registered facilities and pay an amount per child housed at the facility at any point in time. Subsidy amounts can, therefore, vary over time at any particular facility depending on fluctuations in the number of children resident at the facility (4) (5). Facilities were classified as "government funded" when the majority of the

facilities funding was in the form of government subsidy, “mixed funding” when there was an even mix between government subsidies and private funding and “privately funded” when the majority of the facilities funding came from a non-governmental source. A subcategory in this section was the availability of resources at the facilities, specifically the availability of regular volunteers (human resources) and toys (physical resources). Facilities were classified as “well resourced” if there were at least two or more dedicated volunteers at the facility that visited at least once a week with plenty of toys available for the children, “average resources” if there were volunteers at the facility, but they were not regular visitors (at least once a week) and there were enough toys for each child to have at least one at a time, and “poorly resourced” if there were less than two irregular volunteers and there were not enough toys for each child to have one toy at a time.

- ***The type of facility:*** All facilities had to be classified as “baby homes”. This is a facility that houses children between the ages of zero months and twenty-four months, usually for the safety of the child, until a permanent placement can be found (foster care, adoption or permanent placement in another residential care facility). Although children may be resident at a baby home for up to two years, it is not considered a permanent placement.

#### *3.2.1.1. Inclusion Criteria for Residential Care Facilities*

Inclusion criteria for residential care facilities:

- All residential care facilities in the greater Johannesburg area where caregiver training offered by Thusanani Children’s Foundation has already taken place situated in the greater Johannesburg area.
- Residential care facilities situated in the greater Johannesburg area
    - Matched to the above facilities in terms of the following;

        - Size of facility as determined by the number of resident infants and toddlers,
        - Available funding and resources; and
        - Type of facility.
    - No caregiver training had been done by Thusanani Children's foundation.
- Housed infants and toddlers between the ages of two months and 24 months.

#### *3.2.1.2. Exclusion Criteria for Residential Care Facilities*

Exclusion criteria for residential care facilities:

- Residential care facilities receiving on site intervention from Thusanani Children's Foundation, but not receiving any formal training
- Residential care facilities specifically designated as "special needs homes"

#### *3.2.1.3. Sampling Method for Residential Care Facilities:*

All residential care facilities were recruited from the joint adoption clinic run by BigShoes and Thusanani Children's Foundation at The Child Memorial Institute in Johannesburg. All three facilities in the group of residential care facilities where caregiver training had taken place were classified as baby homes. One facility also offered permanent placement for children after the age of two years, but these children were housed in a separate building on the property which was run completely separately from the baby home. There was one facility classified as large, privately funded and well resourced, one facility classified as medium, government funded with average resources, and one facility classified as small, government funded and poorly resourced. The three facilities where caregiver training had not taken place were then selected to match the above characteristics. The only difference in this group was that no large, privately funded, well resourced

facility could be found to match the facility in the caregiver training group. Therefore a facility was selected that had mixed funding (funding from both government subsidies and private donors), but that was still classified as large and well resourced.

### 3.2.2. Infant and Toddler Population

This study's population consisted of infants and toddlers between the ages of two months and 24 months residing in residential care facilities in the greater Johannesburg region. This population was chosen because at the time when this study was conducted, Thusanani Children's Foundation had focused training at facilities that only accommodated infants and toddlers under the age of 24 months. Furthermore, this is the population that was identified as most at risk for being left alone for long periods of time in the Russian study and covers the population group identified in the literature as the most vulnerable to the effects of living in a residential care facility (2) (12).

#### *3.2.2.1. Inclusion criteria for infants and toddlers to be observed:*

- Infants and toddlers between the ages of two months and 24 months.
- Resident in one of the selected residential care facilities in the greater Johannesburg area in Gauteng.

#### *3.2.2.2. Sampling Method for Infants and Toddlers*

Once a full sample of six residential care facilities had been selected, 60 infants and toddlers were randomly selected from these facilities to be observed. Ten participants from each residential care facility were to be included in the study, five

infants and five toddlers. This was done by using random generator tables. At one facility there were only four infants meeting the inclusion criteria, therefore all these infants were included in the sample and to make up the total of ten from the facility, one extra toddler was added to the group (to make a total of six toddlers). The final sample, therefore, consisted of 30 infants and toddlers living in residential care facilities where caregiver training had taken place (15 infants and 15 toddlers) and 30 infants and toddlers living in residential care facilities where caregiver training had not taken place (14 infants and 16 toddlers).

## 3.3. Ethical Considerations

Ethical clearance for this study was obtained from the Ethical Committee on Human Research at the University of the Witwatersrand (M080614) and is included in Appendix A1.

Six facilities were approached at the joint adoption clinic run by BigShoes and Thusanani Children's Foundation and invited to participate in the study. The purpose of the study was explained verbally and a written invitation was given. Once facilities had agreed to participate, written permission was obtained from all the managers of these facilities. Facilities had the right to withdraw from the study at any point without any negative consequences (Appendix A2). Written informed consent was obtained from all caregivers employed by participating residential care facilities and on duty on the days that observations were to be made and who had agreed to participate. (Appendix A3)

All identifying information regarding participating facilities was stored in a safe place and kept completely separately from the data of the study and facilities were only identified by means of codes on the data. The infants and toddlers observed at these

facilities can be considered a very vulnerable group. No identifying information regarding the infants and toddlers was noted during the duration of the data collection and all observations were identified only by means of a code and the infant or toddler's age. No interaction between researcher and the infants and toddlers in this study took place and the children's behaviour was only observed. If severe disability or developmental delay was noted in children's behaviour, the necessary recommendation of assessment and referral was made to the facility manager. Only age, gender and level of education was noted from the caregivers on duty on the days of observations to ensure their anonymity.

Feedback of results was provided to all participating residential care facilities on request. This feedback was given to both managers and caregivers. Only the results of the entire study were given in feedback and individual facilities performances were not discussed. Formal feedback was also given to the occupational therapists at Thusanani Children's Foundation in the form of a presentation. A copy of this report will also be made available to the foundation.

## 3.4. Summary of Caregiver Training Programme

The Thusanani programme consisted of six three hour sessions conducted over a period of six weeks resulting in 18 hours of intensive training. Training occurred at the residential care facility and was presented by an occupational therapist from the foundation. This allowed the maximum number of caregivers to attend and also allowed caregivers who work together on a daily basis to share knowledge and skills. Furthermore, by offering training on site, the hands-on practice of skills and activities could be done with children from the facility, allowing the therapist to adapt the material to suit the individual needs of the children at that facility. Training combined theoretical knowledge about child development with hands-on skills training. Developmental activities that could be used during personal management time were

modelled by the therapist and caregivers were encouraged to observe, participate and take over the execution of these activities. Although material was presented in English, pictures, photos and demonstrations were used to overcome language difficulties and low educational levels (Appendix B). Caregivers and managers were also encouraged and facilitated to problem-solve together to overcome each facility's unique resource, structure and routine constraints.

Thusanani thus used the combination of theoretical training and practical training in the form of modelling and practicing behaviour described as effective in the literature.

## 3.5. Research Measurement

### 3.5.1. Measuring instruments

The measuring instrument used to collect data during this study was the use of spot observations. Observation is a frequently used tool in research, especially when questions relating to behaviour or performance are being answered and is most easily utilized when there is physical evidence to see or hear (40). Observations allow for the direct collection of information without the interference of the perceptions or attitudes of the subject being observed (40). It also allows for information to be collected in a natural setting, rather than an unnatural, experimental setting (40). Two broad forms of observations have been identified, namely participant observation and passive observation.

Participant observation is most often used in qualitative research where the observer actively participates with study participants in research activities or discussions (40). This form of observation was not used in this study and will not be referred to in

further text. Passive observation occurs when the observer makes observations without interacting or interfering with the subject being observed in order to preserve objectivity and decrease bias and is the form of observation used in this study (40).

Spot observations are a specific form of passive observation where regular, unannounced observations are made by an impartial observer within a time period in order to estimate overall time-use of an individual (2). This method was developed from the use of time diaries, but has been cited as more reliable as it does not rely on either participants or parents and caregivers to provide correct information (40) (2) (7). Spot observations have been cited as a reliable method of gaining information about how children spend their time (2) (7). This methodology has been used in the two previous time-use studies of Tirella et al. (2008) (2) and Daunhauer et al (2005) (7).

In this study, spot observations made by the researcher of the children's activities and interactions during a period of time was used to estimate the quantity of time children spent in specific activities (2) (7). This methodology is similar to that used by Tirella et al. (2008) in their study of children's time-use in Russian residential care facilities and is reproduced with their permission (2).

Observations were made in order to measure the quantity of time children spent in different activities as well as with their primary caregiver (the temporal context). Observations were also made on the quality of that time in terms of interactions with the primary caregiver (the social context). Four different categories were used to categorize the observations, which were derived from Tirella et al. (2):

- With whom the child was spending time (WHO). This observation was specifically made to determine the quantity of time any individual child spent in

one-on-one contact with others including the primary caregiver and with the WHAT thereby determine the temporal context of that child.

- What the child was doing at that moment (WHAT). Again this observation was specifically made to determine the quantity of time any individual child was spending in any one activity and is used to describe the temporal context. The observations were specifically looking at the ratio between personal management tasks, meaningful activity (defined as developmentally appropriate activities including play and learning-based tasks), and non-meaningful (defined as developmentally inappropriate activities such wandering around the room and repetitive movements such as rocking).

- What the caregiver's role within the room was (CAREGIVER ROLE). This observation determined whether caregivers were interacting on a one-on-one basis with children, in groups or not interacting at all and looked at the quality of those interactions during any one activity. Together with COMMUNICATION, formed part of the measurement for the social context.

- Whether either the caregiver or the child was using language during the observation (COMMUNICATION). This observation was made to look at the quality of the communication between the caregiver and the child and the child's language use with the CAREGIVER ROLE thereby to describe the social context.

Observations were assigned data codes according to codes used in the study done by Tirella et al. (2008) (2). A description of these research codes can be found in Appendix C1.

Observations were recorded on a specifically designed data collection sheet again derived from Tirella et al (2008) (2) (Appendix C2). Observations were recorded using a dichotomous scale - one was recorded if the child or caregiver was observed participating in the activity and zero if the child or caregiver was not observed participating in the activity. Each subcategory was a unique and discreet entity and only one subcategory per category could be marked as a one (yes) in one observation. In other words, during one observation only one of the subcategories of "who" – "alone", "with caregiver", "with another adult" or "with another child" - could be marked as one and all the other subcategories had to be marked as zero.

Reliability of the observation tool was ensured by strict definitions of how behaviour was to be interpreted for data codes (see Appendix C2). Furthermore a strict research procedure was put in place to ensure that observations were made in a uniform manner both across the day as well as between facilities. All observations were made by one person (namely the researcher) to ensure uniformity of observations.

## 3.6. Research procedure

Once permission had been obtained from the managers of the residential care facilities, dates were set with each facility for an initial visit and for the observations to occur. During the initial visit, the purpose of the study was explained to caregivers and caregivers were invited to participate. Caregivers were assured anonymity and that their names would not be recorded anywhere on the observation sheet. They were also assured that the research in no way intended to evaluate their work performance and that there would be no negative consequences to participating in the study. Those that agreed to participate in the study, signed informed consent.

The researcher practiced the use of the observation tool at a residential care facility receiving services from Thusanani Children's foundation, but not participating in the study in order to familiarize herself with the tool to ensure reliability of observations during the study.

Basic demographic data about the facility's routine as well as demographic data for the participating caregivers and children were also collected during this visit. Dates for observations to occur were arranged and logistics, such as where the researcher would spend the time between observations and how the researcher would enter the care-giving room to make observations, was finalized.

Observations took place between 08:00 and 17:00. Originally the concept had been to block the day into "awake time" and "sleep time" before the commencement of observations. This would allow for "awake time" and "sleep time" to be analyzed separately as the expectations on caregiver interaction with infants and toddlers would be different between these two times. However, during the initial visit to the facilities it was found that although facilities had general routine times, these were not hard-and-fast rules, e.g. infants and toddlers sleep sometime between 9:30 – 12:00 in the morning, but there is some flexibility, depending on the specific infant or toddler. Only one institution had a set routine that caregivers adhered to fairly rigorously. As a result of this discussion around routines with managers at the initial visit to facilities, the researcher decided not to try and divide the day into "awake time" and "sleep time" before commencing observations, but rather to add an extra column on the data collection sheet in which to record when an infant or toddler was sleeping. These observations could then be removed from the data when analyzing time-use during infants' and toddlers' awake time.

Observations were made once every thirty minutes between 08:00 and 17:00 on observation days. Three to four participants were observed on one day. To ensure continuity, the participants were always observed in the same order. One minute of observation time was allocated to each participant per observation and observations of participants were made consecutively. In other words, the researcher entered the care-giving room every thirty minutes to make observations. The researcher would start with participant one and observe the participant for one minute. The researcher would then turn to participant two and observe this participant for one minute, then observe participant three for one minute and finally participant four (if there was a fourth participant) for one minute. Then the researcher would leave the room. This procedure was repeated nineteen times throughout the day with the first observation being made at 08:00 and the last one at 17:00. All times were monitored with a stop watch to ensure conformity. An observational guide was used to record data (40) and data was codified according to coding categories A-E as indicated on the time use sheet adapted from Daunhauer and Cermak (2005) and Tirella et al. (2008) ( (2) (7) (Appendix C1 and C2).

Observations were made in whichever areas were normally used during that time period in the facility's normal routine. Between observations, the researcher was positioned away from the all the possible areas that the children and their caregivers might use. At the time of the observation the researcher entered the room as unobtrusively as possible and avoided any interaction or eye-contact with the children or their caregivers (40) (2) (7). The children very quickly became accustomed to the entrance of the researcher and as this did not result in any extra attention, lost interest in the occurrence. In this way, the researcher minimized influence on the activities that participants participated in by her presence. In order to prevent the researcher's presence from influencing how much time caregivers spent with participants and what they did with them, they were not informed which specific children were being observed on which days (2).

## 3.7. Data analysis

Data analysis followed the following steps (41):

1. The data on time use were divided into two distinct groups for analysis, namely infants and toddlers living in residential care facilities where caregiver training had taken place and infants and toddlers living in residential care facilities where caregiver training had not taken place. All demographic data for the caregivers were also divided into these two groups – those working in facilities where training had taken place, and those working in facilities where training had not taken place.

2. Demographic information of the children as well as the caregivers was described using means and standard deviations and was tabulated. Caregiver age was compared using the unrelated t test and other demographic information was compared using the extended chi-squared test to ensure that the two groups of caregivers were similar in composition (41).

3. Data were further subdivided by means of age into infants (defined as between the ages of two months and twelve months) and toddlers (defined as between the ages of thirteen months and twenty-four months). There were, therefore, four distinct groups for analysis – infants living in residential care facilities where caregiver training had taken place, infants living in residential care facilities where caregiver training had not taken place, toddlers living in residential care facilities where caregiver training had taken place and toddlers living in residential care facilities where caregiver training had not taken place. The demographic information of the infants and toddlers observed was described within these four groups using means and standard deviations and was tabulated. The demographic information of the two infant groups was compared to each other using an unrelated t test for age and a Chi-squared

test for gender to ensure that the two groups were similar. The same procedure was carried out on the two toddler groups (41).

4. Each individual child's time use during the day was estimated for each category and subcategory by dividing the number of observations for the subcategory by the total number of observations in the category for the child. In other words the number of observations for each subcategory was divided by nineteen, the total number of observations made on one day. These results were then expressed using percentages and covered the child's full day, including “sleep time”. A second analysis was done on each child's individual data to look at time use during “awake time”. All sleep observations were removed from the data and the same procedure as described above was followed. This time, however, the total number of observations varied between children depending on the number of sleep observations made for each child. These results were also expressed in percentages.

5. Tables were drawn up for each group and each child's individual percentage scores for each subcategory were entered into the appropriate group table. The means (expressed in percentages) and standard deviations of each subcategory of each group were calculated. This was calculated first over the whole day, including “sleep time”. Then “sleep time” was removed from the analysis and the means were worked out for “awake time” only. The aim of this analysis was to describe the time use patterns of the four different groups (2) (41).

6. Activity profiles for each group were generated using the above information in the form of pie charts. Data describing with whom a child was spending time as well as language use were depicted in bar graphs.

7. The unrelated t test was used to compare the subcategories of the two infant groups to each other and the two toddler groups to each other to determine whether there were any statistically significant differences between either the two infant groups or the two toddler groups. The aim of this analysis was to determine whether caregiver training made any statistically significant differences in the time use patterns of the different groups (41).

8. A Pearson product moment correlation test was used to determine whether there was a correlation between age and time spent alone. This was done on the entire sample and not on each individual group within the sample (41).

9. Raw data tables can be reviewed in Appendix D.

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