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Examining the Impact of the SafeCare Parent-Infant Interaction Module on the Quantity and Content of Maternal-Infant Directed Utterances

Sanjana S. Mammen

B.S., Georgia Institute of Technology

A Thesis Submitted to the Graduate Faculty

Of Georgia State University in Partial Fulfillment

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Examining the SafeCare Parent-Infant Interaction Module's Impact on the Quantity and Content of Maternal-Infant Directed Utterances

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July 17, 2012

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Abstract

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Examining the SafeCare Parent-Infant Interaction Module's Impact on the Quantity and Content of Maternal-Infant Directed Utterances

(Under the direction of Shannon Self Brown, PhD)

Positive parenting skills reduce risk for child maltreatment. The Parent-Infant Interaction (PII) module of SafeCare was designed to promote positive parent-child relationships; however, little research has examined its impact on parent-infant utterances. Past research has indicated that a rich parent-child language environment predicts literacy skills and academic achievement, so the present research studies how PII impacts positive maternal infant-directed utterances. Three dyads with various risk levels with infants aged younger than 9-months were offered PII training and a short video modeling positive parent-infant communication. Multiple-probe, single-case experimental design yielded data with several positive trends for maternal-infant utterances, but findings were inconsistent during all conditions. Conversely, following the video, improved utterances were demonstrated consistently across all activities and dyads. These pilot data render several future studies relevant to further our understanding of PII's impact on maternal-infant communication broadly, including more rigorous research designs and measures to further study this important outcome.

Keywords: SafeCare, maternal utterances

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Examining the SafeCare Parent-Infant Interaction Module's Impact on the Quantity and Content of Maternal-Infant Directed Utterances

SafeCare is a behavioral parent-training program that teaches parenting skills pertaining to health, home safety, and parent-child/parent-infant interaction. SafeCare is most often used within child welfare programs to develop positive parenting skills linked to risk factors for neglect and physical abuse. It is also one of the only interventions shown to improve parenting skills correlated with neglect perpetration (Gershater-Molko, Lutzker, &Wesch, 2002, 2003; Chaffin, Hecht, Bard, Silovsky, & Beasley 2012). Chaffin and colleagues (2012) and Gershater-Molko and colleagues (2002) as well as other studies have indicated the effectiveness of SafeCare in increasing positive behavior among parents, as well as reducing child neglect in families at risk.

Research has indicated significant improvements in targeted parent behaviors through the model. In particular, Gershater-Molko and colleagues (2003) found an 84% increase in positive parenting skills taught through SafeCare, including skills related to home safety, child health, and positive parenting skills. While SafeCare has largely been implemented with parents involved with child welfare, the prevention services may benefit at-risk families not involved in CPS, and continue to positively impact additional parental outcomes than those that are considered the proximal target intervention behaviors.

Beyond improving positive parent behavior, the number of cases that return to CPS after receiving SafeCare is reduced. In terms of neglect reduction, findings from a statewide comparative effectiveness trial of SafeCare in Oklahoma, which enrolled over 2,100 families with prior involvement with Child Protective Services (CPS) who were

followed on average for six years, indicate that SafeCare reduced child maltreatment reports by about 26% (HR = .74) relative to services as usual. The authors concluded that SafeCare prevented between 64 and 104 reports per 1000 cases when assuming a recidivism rate of 45% (Chaffin et al., 2012). In a similar study in California, SafeCare also demonstrated effectiveness in reducing recidivism with parents involved with CPS. Specifically, SafeCare was found to have a recidivism rate almost three times lower than services as usual (15% compared to 44%) (Gershater-Molko et al., 2012).

Parent-Infant Interaction (PII) module of SafeCare

There are four total modules that comprise the SafeCare program, including Health, Home Safety, Parent-Child Interaction (PCI), and Parent-Infant Interaction (PII). This study focuses exclusively on the Parent-Infant Interaction module or PII, although PCI was originally designed to teach parents to provide engaging activities to stimulate their infants and increase positive interactions. The target parental behaviors were validated by childhood specialists, teachers, and subject area professionals. Teaching the core PII behaviors includes training and encouraging the parent to increase the use of looking, talking, touching, and smiling during interactions with their infant across all activities. The core PII behaviors and skills together with imitation, holding, and rocking comprise what is known as the iPAT skills.

One study to date focused one of these four core behaviors, talking (Lutzker, Lutzker, Braunling-McMorrow, & Eddleman, 1987), to understand the impact of the intervention on parent-infant communication. In particular, Lutzker and colleagues (1987) added an additional prompting piece to the PII module to examine the impact of this intervention and prompting on affective skills and verbal skills among mother-infant dyads. The

single mother participants were prompted with visible cues written on cards during activities with their infants. Target skills that were prompted included mothers' verbal responses to their infants and use of affectionate language with their infants. Findings indicated that PII with added prompting resulted in an increase of maternal affectionate words and positive verbalizations over the course of the intervention. Although these results were promising, no additional studies have been conducted to examine the impact of the PII module of SafeCare on percent occurrence of parents' verbalizations and further research is warranted.

Understanding the impact of the PII module on parent-infant communication is necessary because, a rich verbal environment can enhance a child's development. Research has indicated that increased rates of parent-infant communication are directly correlated to child academic successes up to six years later (Hart & Risley, 1995), and that lower percent occurrence of positive maternal-infant utterances is linked to lower educational outcomes and as well as diminished bonding capability (Kazutaka, Miho, & Kikusui, 2011). As was evidenced by the seminal Hart and Risley study (1995), which analyzed 42 families over 3 years, the variation in children's intellects and ease with language later in life was strongly correlated with the amount of language to which the parents exposed children to in early development, ultimately resulting in very different trajectories of academic achievement and literacy skills in children. These findings were illustrative that though risk for child maltreatment is associated with a nexus of certain factors including young age, low income, low education, and single parent status, a rich language environment is one of the strongest predictors of later achievement. Thus, it is imperative to learn more about how vastly disseminated home visiting programs, such as

SafeCare impacts parent-infant communication, to determine whether this is an outcome that is worth tracking and report on in research and intervention implementation.

Purpose of Current Study and Outcomes

The current study strived to advance the original research of Lutzker and colleagues (1987) by focusing on increasing percent occurrence of parent-infant verbalizations. For this study, mothers were recruited to participate in standard PII to gauge the impact of this intervention on parent-infant communication without the prompting utilized in the original study. The mother participants came from both at-risk and low-risk groups, which allows for broader generalization of how the SafeCare PII module impacts parents of varying risk levels. Maternal infant-directed utterances, which are words spoken from a mother to her infant, were recorded across a variety of experimental conditions: baseline (prior to intervention), Intervention Phase one: Psycho-education on Developmental Milestones (session 1 of PII, which serves as a secondary baseline), Intervention Phase two: PII training across daily routines, and Intervention Phase three: a video enhancement condition. Utterances were also examined at two follow-up time points (three-week post intervention and six-week post intervention) for each parent-infant dyad. The primary research hypothesis was that the overall utterance percent occurrence would increase from the baseline and Intervention Phase One, throughout the implementation of Intervention Phases Two and Three.

Method

Participants

Participants included three mother-infant dyads of two risk categories: at-risk and low-risk. To be considered ‘at-risk’, a dyad must have at least three of the following

characteristics: young age, low income, low education, and single parent status, and of 'low-risk' if less than three of these factors were present. The researcher recruited dyads though contact with leaders from an early childhood program and a home for single mothers in metro Atlanta. One at-risk mother-infant dyad (Dyad A) was referred from the House Manager of the Families First Second Chance Home, a metro Atlanta home for single mothers under the age of 21 who are facing homelessness. Dyad A included the 19- year-old African American, single, first-time mother and her one-month old female infant who qualified for welfare. Two dyads (Dyad B and C) met the low-risk criteria and were referred through the Director of an early childhood program in metro Atlanta, Lanette L. Suttles Child Development Center. Dyad B is a Caucasian, 35-year-old second-time mother, who is married and professionally-employed and her 6-month-old son. The mother of Dyad C is an unemployed, Caucasian, 32-year-old married mother with a 7-month-old son, who is the second child.

All three dyads met the following selection criteria and agreed to the study: have at least one infant younger than 9 months of age; consent to being video-recorded; state an interest in learning about bonding with their infant. The dyads received monetary incentives for participation; specifically, $10 following each session and $30 at the end of the second follow-up session, for a total of $100 to $120 per dyad upon the completion of the research.

Session Activities and Locations. The researcher (hereafter referred to as the Home Visitor or HV) conducted the baseline, intervention, and follow-up sessions in the participants' residence located in the metro Atlanta area. Sessions were conducted in the area of the home selected by the mother. Dyad A resided in a community-based second

chance home, and the home consists of one bedroom, with an adult bed and an infant crib. All sessions and activities took place with the dyad in the bedroom. Dyad B lived in a new single-family home. The play activity took place on the playroom floor. The feeding activity took place in the kitchen. The changing activity took place on a changing table in the infant's room. Dyad C also resided in a single-family home and the feeding and play activity took place in the living room while the dressing activity took place in the infant's room on a changing table. The Daily Activity Checklist (DAC) (Appendix 1), which was a survey implemented in the first session helped isolate which activities needed the most change for a mother and her infant in order to minimize challenging behavior.

Observation System. Intervention data were collected using a partial interval recording method by completing one Planned Activities Training plus Verbalizations (iPAT+V) Checklist-Infant: Home Visitor Version (Appendix 2) for each of three selected activities. The two routine activities were selected by the mother participant, which included the following: feeding, diapering, and dressing. The mothers also engaged in a developmentally-appropriate play activity with their infant. The iPAT+V score sheet allowed the HV to record maternal infant-directed utterances during an activity while simultaneously scoring the iPAT skills, namely, looking, talking, touching, smiling, imitating, holding, and rocking. The HV observed and recorded percent occurrence of positive and negative utterances (defined below) for the duration of each activity in 10-second intervals with an occurrence/non-occurrence coding system per interval. A two- to five-minute time frame was chosen to capture the information necessary in accordance with the PII module. A score of all four core behaviors or 100% signified mastery in the PII module.

For the purposes of this research, a positive utterance was defined as explicit mother praise and approval, verbally expressing love, addressing with endearments, behavior descriptions, reflections, labeled and unlabeled praises, direct commands, infant repetitions, confirmations, comforting words, calling attention to something, and commentary. For example, a mother verbally encouraging an infant to crawl would be a positive utterance. Further, negative utterances were defined as expressing disapproval including any criticisms, scolding, disagreement, disparagements and hostile speech (Shanley & Niec, 2011; Hart & Risley, 1995). For example, a negative utterance would include a statement of the mother negatively commenting on her baby's appearance. If a mother made a positive or negative utterance within an interval, the HV placed a plus (+) on the IPAT+V Checklist under the corresponding column. If nothing was uttered within the interval, the HV placed a minus (-) in the table under the corresponding column. Hart & Risley (1995) considered word usage in their computations of a richer language environment, but for the purposes of this research, resources were too limited to be able to transcribe the data to perform that level of data analysis. Positive, negative, and neutral tone were also considered as dependent variables, but reliable measures were challenging; thus due to time constraints and lack of valid measurement tools available, positive and negative utterances were selected as the primary dependent variables.

The HV summarized each observation with an utterance interval percent occurrence of zero to one. By way of illustration, within a five-minute activity (30 ten-second intervals) if a mother produced positive utterances during 15 of the intervals and no negative utterances in all intervals, this activity would have a 50% positive utterance

measurement and a zero percent negative utterance measurement. The positive ratio was determined using the equation:

$$\frac{\text{\# of intervals with positive utterance intervals}}{\text{total \# of intervals}}$$

Similarly, a negative ratio was computed for each session, but ultimately was not utilized or reported for the purposes of this research due to the low base rate of negative utterances, resulting in an inability to track trends in the data.

Observer training. Observers were Georgia State University graduate students. Prior to beginning the study, the HV was trained in the Parent Infant Interaction (PII) module, including a six-hour workshop taught by a certified Training Specialist. The HV trainee learned to score a parent-infant interaction using previously recorded PII session videos. The trainer examined the trainee's scoring for reliability; discrepancies were discussed until her score met mastery criterion according to SafeCare (85% or higher). Finally, the trainer scored the trainee's role-play and administered a written quiz which demonstrated the HV trainee's mastery of PII, allowing for PII module delivery with families.

Reliability

Reliability ensures that the measures have been accurately recorded without bias from the HV, who is aware of the study. The HV and reliability observer watched SafeCare PII training videos. Each then independently scored the same video with the iPAT+V checklist until their scores met agreement of 85% (criterion reliability score) or higher. Reliability percentages were calculated using the following equation:

$$\frac{Agreements}{Agreements + Disagreements} * 100$$

The HV recorded all sessions with a video recorder for an observer to calculate reliability. Reliability was conducted on 5/9 of the sessions for Dyad A, 5/9 of the sessions for Dyad B, and 4/7 of the sessions for Dyad C (excluding follow-up sessions). Each observer's observations were compared to determine binary reliability outcome (yes-no agreement) within the intervals for the duration of an activity. Mean baseline reliability scores across Dyads A-C were 92.3%, 93.8%, and 97% respectively. Treatment-phase reliability observation means for each Dyad after the PII sessions were: 93.5%, 94.4%, and 97.2%. The final treatment phase, the video enhancement yielded reliability agreement of 93.4%, 98.4%, and 97.2% for Dyads A-C. No sessions fell below criterion. As intervention reliability was high, no reliability was conducted on the follow-up sessions.

Materials

HV implementation materials. PII session outlines were used as a guide for the HV (Appendix 3). During each session, the HV utilized the iPAT+V, which was developed to administer the PII home visitor assessment while simultaneously recording utterance intervals. Dyads received standard PII training materials including the Daily Activity Checklist (DAC), iCards which depict the PII parent skills, and iDevelop cards, which detail age-appropriate developmental milestones (Appendix 4**).** A video recorder (Flip Cam) was used to record maternal utterances during each of the activities.

Enhancement. A video enhancement was developed as an additional intervention prompt to pilot and test the acceptability and effectiveness of this technology in further improving maternal utterances to their infants for a participant following the PII

intervention. This prompt was administered for all three dyads as the result of decision points indicating maximal progress (stabilization) from the PII intervention. The three-minute video exhibited a play activity in the home of the recorded mother of Hispanic descent and her 6-month-old infant. The mother-infant dyad was on a blanket with toys and exhibiting positive verbalizations.

Experimental Procedure

Orientation and baseline. During the first PII session, baseline assessment, the HV reviewed the study consent documents, written at a 7th grade reading level, and the DAC with the mother participant. The mothers' responses to the DAC informed the HV and assisted the mother in selecting which of the two routine activities the mother perceived as most challenging for the HV to observe along with the play activity in the baseline assessments during sessions one and two. The HV observed the activities, which (except for Dyad C who discontinued the feeding activity after Session 2) were consistent throughout the intervention. For the activity portion, the mother was instructed to interact normally with her infant during the three activities while the HV observed each interaction without feedback. Before leaving, the HV summarized the session, solicited possible questions, and planned the next session date and time.

For PII Session Two, the dyad was observed in the three predetermined activities consistent with the prior session. Data from each of the three activities were analyzed to find the activity with the most stability. Following the observations, the HV and mother discussed infant developmental milestones or typically developing behaviors for infants, and physiological states following standard PII protocol. Of note, this developmental information session does not target behavior training in any of the core PII skills, and

thus, is not expected to promote behavioral change among parents. Data from this session was treated as a second baseline condition.

Phase 1: Psycho-education on developmental milestones. During PII Session Three, the HV reviewed the previously covered Developmental milestones materials. Then the HV conducted observations in each of the activities, without feedback. The intervention activity was then identified based on the data collected and emerging trends from the second and third sessions. Typically the activity exhibiting the lowest score in utterances, or the greatest reduction in utterances was targeted for intervention. The intervention typically began during Session Four. However, for Dyad B, due to lack of decision points prior to session four, an additional developmental milestones baseline was collected during session four and the intervention phase began with session five.

Phase Two: Standard PII intervention. In the intervention session (Session four for dyad A and Sessions four and five for Dyad C, and sessions five and six for dyad B), following the PII SafeCare outline, the HV provided explanation and demonstration of PII target skills for the dyad, which were to be practiced during the chosen activity (this was the only intervention activity for Dyad C). The HV scored utterances and core skills using the iPAT+V Checklist and after the activity was completed, the HV provided the dyad positive and constructive feedback regarding her use of the target skills. Next the dyad was asked to engage in the remaining two activities that had not been targeted for intervention for additional data points for these activities. After HV had finished observing and then scoring the three activities, the HV chose a second intervention activity based on the stability of the data for the following session.

At the conclusion of this session, the bonding behaviors of holding, imitating, and rocking were discussed, modeled and practiced. The HV then summarized the session, gave the dyad iActivity Cards, and encouraged her to practice the bonding behaviors in activities with her infant and to review the materials and information learned as homework prior to the next session.

For the next PII Session (Session seven for Dyads A and B), the mother-infant dyad engaged in the first intervention activity, while the HV scored maternal utterances. Then Dyad A engaged in the previously chosen second intervention activity and Dyad B engaged in both remaining activities as the observational data had stabilized in both. The HV responded after each of the intervention activities with positive and corrective feedback which was focused on parental use of bonding skills especially communication. Then the HV scored the remaining non-intervention activity, if there was one. At the end of the session, the HV reviewed key concepts prior to setting the date and time of the next session.

For the next PII Session (Session Eight for Dyads A and B and session Six for Dyad C), the dyad interacted in the intervention activities while practicing all of the bonding skills as the HV scored the assessments and provided positive and constructive feedback regarding bonding behaviors following each activity. For Dyads A and C (as Dyad B had intervention in all activities), the non-intervention activity was then performed without feedback from the HV. The instructional part of this session focused on training the parent in cPAT steps (which are appropriate for infants as they move into toddlerhood) through didactic instruction, modeling and practicing with the cActivity

Cards. Finally, the HV summarized what was reviewed, set up the next session date and time, and requested the parent practice all of the skills as homework.

Phase Three: Video enhancement. By the next session (Session Nine for Dyads A and B and Session Seven for Dyad C), the third phase of intervention, the Video Enhancement, was introduced following stable data with each of the Dyads. The video was introduced followed by a brief discussion of its content as well as the dyads' perceptions and views on it. At the session conclusion, the participants performed all of their activities while the HV recorded with the iPAT+V Checklist. Lastly, a demographic survey was administered.

Follow-up. A follow-up session was performed 3 weeks after the final training session, and again 3 week after the initial follow-up session. The HV collected data at both follow-up time points for all activities to determine generalization of skills.

Experimental Design

The proposed research utilized a single-case, multiple baseline design across activities replicated across dyads in order to differentiate whether the treatment improved maternal utterances (Kazdin, 2007). Sessions were from forty-five to ninety minutes in duration, and were conducted consecutively (immediately following another session in order to best meet the time constraints of participants) or no more than two weeks apart. While the best implementation of a multiple baseline design suggests that an intervention occur once a stable level of performance is reached prior to beginning treatment (with only moderate variability) (Kazdin, 1978), the HV introduced interventions where appropriate. The stability of utterances for the dyads was to be characterized by the negative slope in utterance percent occurrence or an absence of slope, yet at times, the

HV chose to intervene where there was a slight positive slope due to the slightness of the variability in data. When data were stable in one activity, the HV conducted an intervention in the activity while data continued to be collected in other activities. Subsequently, the intervention was introduced in a staggered fashion for the second activity after its baseline. The observational data thus dictated the number of sessions each dyad received.

Results

The effects of the PII intervention on positive utterances are shown in Figures 1, 2, and 3. Overall, positive maternal utterances increased from baseline over the course of training, and were maintained through two follow-up visits at three and six weeks post-intervention. The data for each dyad is delineated below.

Mother-Infant Dyad A

Baseline. Figure 1 shows a relatively stable trend in scores in the three activities. The Diapering activity increased slightly from 60% to 63%. The Dressing activity slightly descended from 77% to 63% while the Play activity increased from 67% to 87%.

Phase One: Psycho-education on developmental milestones. Figure 1 summarizes the data collected during PII sessions. Upon data collection for Phase One (Session three following introduction of developmental milestones), the scores were inconsistent. The Diapering activity dropped to 35% utterances, the Dressing activity remained low at 69%, and the Play activity improved slightly to 88%. The developmental milestones phase of the PII intervention gave the dyad helpful information about her infant's development. Phase One (Session three) indicated a decrease in maternal-infant utterances in the Diapering activity and slight increases in the Dressing and Play activities.

Phase Two: Standard PII intervention. Due to the decrease in the diapering activity from 63% to 35%, the decision was made to introduce the second phase of the PII intervention for diapering at the start of session 4, which then yielded an 8% increase at 43% percent occurrence of maternal utterances. The data then indicated a steady rise and stabilization after two observations while the Dressing activity decreased in utterance percent occurrence from 94% to 72% in session 6. Thus, a decision to intervene at the start of session seven in the Dressing activity was made. The data yielded an increase in positive utterances by over 22% in this activity, back to its previous score of 94%. The Play activity remained stable, thus the decision was made to not intervene in it.

Phase Three: Video enhancement. Each of the three activities stabilized at scores of 83% maternal-infant utterances, which indicated appropriate timing for the third phase of intervention, the Video Enhancement. After receiving the video prompt phase of the intervention, the dyad's positive utterance percent occurrence increased in all activities; to 94% in the Diapering and Dressing activity and 89% in the Play activity, respectively.

Follow-up. As seen in Figure one, at the three-week post intervention observation, continued improvement occurred, with frequencies of 94%, 100%, and 100% during Diapering, Dressing, and Play, respectively. It is important to note that there was no specific PII intervention in the play activity, thus the perfect score for the play activity indicated that knowledge was generalized during the two routine activities to the play activity. At the six-week follow-up data collection, improvement over the baseline maternal-infant utterances was maintained and data indicated sustained use of the learned skills with 100% for the Play Activity, 100% and 95% for the Dressing activity, and 94% and 95% for the Diapering Activity.

Mother-Infant Dyad B

Baseline. Figure two shows an increasing trend in the Feeding activity from 40% to 57% and in the Play activity from 43% to 73%, although a decreasing trend from 83% to 69% occurred in the Changing activity.

Phase One: Psycho-education on developmental milestones. Figure two also demonstrates the data collected during PII sessions. For phase one (sessions three and four), developmental milestones were reviewed and data were collected, which led to inconsistent results. Therefore another data point was collected in each of the three activities. These data indicated a decrease of positive utterances in the feeding activity, and increases in the Changing and Play activities.

Phase Two: Standard PII intervention. Given the decreasing trend of 63% to 56% in the feeding activity, it was chosen as the intervention activity for the second treatment phase. Session five data measuring the immediate effect show a 27% increase to 83% occurrence of positive utterances in the targeted activity, Feeding, and slight increases for the remaining two activities, Changing and Play. Data collection in session six revealed a decrease in positive utterances in all three activities; therefore PII was introduced for the Changing and Play activities promptly within the same session in order to generalize communication skills, which yielded improved scores of 83% and 89% for Changing and Play, respectively. The unexpected decreased score of 50% in the feeding activity during this session was due to the mother speaking to her other child during the observed activity. Utterances not spoken to her infant were not recorded as maternal infant-directed utterances.

Phase Three: Video enhancement. When two of the three activities, Feeding and Play, stabilized at 78%, and the third activity, Changing, had minimal variation of a slight upward slope, the third phase was introduced at session nine resulting in increases across all activities. Specifically, a positive maternal-infant utterance percent occurrence of 90% in the Feeding and Changing activities and a 94% in the Play activity was observed.

Follow-up. As seen in Figure 2, upon the three-week follow-up session observations, communication skills were continuing to improve and yielded the best utterance frequencies that Dyad B ever attained at 94%, 94%, and 100% during Feeding, Changing, and Play. This continued improvement indicated a level of comfort Dyad B had acquired with communication skills after some time and practice with them. Upon the second follow-up visit, high achievement of positive maternal utterances continued with 94%, 93%, and 96% in the aforementioned activities. The frequencies were maintained at a much higher rate than baseline which illustrates that the intervention effectively sustained quantity of utterances beyond the intervention.

Mother-Infant Dyad C

Baseline. Figure 3 indicates that across the two baseline sessions, there was an increasing trend in positive utterances for the Play activity from 43% to 78% and in the Changing activity from 54% to 68%, while the Feeding activity data remained stable at 10%.

Phase One: Psycho-education on developmental milestones. The first-phase of the PII intervention began at session three due to the low percent occurrence of utterances sustained across the baseline in the feeding activity, after which the utterance percent occurrence did not consistently improve.

Phase Two: Standard PII intervention. The decision was made to initiate the PII module in the play activity, because of its decrease from 78% to 73%, although there were increases in the changing and feeding activities from 68% to 86% and from 10% to 28%, respectively. At this point, Dyad C also expressed concern and an unwillingness to alter her interactions with her infant during the feeding activity which led to the discontinuation its data collection. Utterances increased for both remaining activities following intervention in the play activity. The play activity increased from 73% to 89% activity and the changing activity increased slightly from 86% to 89% without ever having a second-phase intervention.

Phase Three: Video enhancement. Following stabilization of observations within two percentage points of the previously observed utterance frequencies, the enhancement was introduced. Scores increased from 88% to 96% in the play activity and from 91% to 100% in the changing activity.

Follow-up. Dyad C maintained high percent occurrence upon the three-week follow-up with 100% in both activities, which indicated the maintenance of the communication skills that Dyad C acquired and practiced. The utterance percent occurrence was 94% and 96% in play and changing, respectively, upon subsequent follow-up**.**

Discussion

This study examined the effects of the standard SafeCare PII module on maternal-infant utterances. This study also observed additional changes in utterances as the result of a video intervention of a mother-infant interaction, as a follow-up to standard PII. The primary hypothesis for this study was partially supported. Specifically, some positive trends emerged in which PII increased positive maternal utterances to their infants, but

overall this finding was not consistent across participants and activities. There was a consistent trend for the video intervention to increase this percent occurrence across participants and activities. Further, there was some support that positive improvements in maternal utterances generalize across activities and were maintained at follow up. These pilot data support the need for future research to more fully understand whether the increase in maternal-infant utterances leads to long-term improvements in parent-child communication and child language development under more rigorous conditions.

When comparing the findings across dyads, baseline data showed that each of the three dyads scored moderately well during baseline with scores, which indicated that these mothers already had some skills for effectively communicating with their infants. However, the data did indicate that there was room for improvement in every activity. During the first intervention phase (developmental milestones), the dyads' scores were not affected in a consistent way, which was to be expected as the purpose of this intervention is not skills training, but educational in terms of child development. The baseline frequencies of utterances from the observations informed the HV of which activity necessitated intervention. Phase two (PII parent training sessions), yielded improved quantities of positive maternal utterances across all dyads in some, but not all, of the targeted activities. Finally, once data stabilized following the PII interventions, the Video Enhancement (phase three) began. This resulted in improved frequencies for all dyads. The two follow-up time points show continued improved scores, although there did seem to be a trend for slight decreases across activities for all parents at the final follow-up session. The maternal utterances at both follow-up points were higher than baseline and suggest that the PII intervention was beneficial to the outcome.

Perhaps the most unique and innovative aspect of this study, were the findings related to video enhancement. The three-minute video enhancement, as a convenient addition to the PII module, was supplemental and appeared beneficial across all activities for all dyads. The findings suggest that the video enhancement to the PII module could also be used as an intervention itself, because this form of instruction was helpful in this case. Considering whether to incorporate this video enhancement into standard PII delivery, as well as other potential opportunities for broadly disseminating the video will be an important next step in this line of research.

Limitations

There were several limitations in this study. First, the decision points used to determine when intervention in a particular routine or activity was neccessary was not always consistent. At time, decisions that were inconsistent with multiple baseline designs, (e.g. intervening on a descending or stable baseline) were made in order to expedite both data collection. Also, if a decision point during a baseline assessment and intervention delivery was not prepared, an additional data point was collected. This mostly affected Dyad B for whom two data points were collected after developmental milestones intervention. Another limitation is the timing of intervention sessions, which were inconsistent among participants. That is, some sessions were consecutive, while others were up to two weeks apart. Sessions were planned at the convenience of the dyad, and to complete research within time constraints. Future research designs would benefit from standardized time between delivery sessions. A final limitation is that generalizibiity is limited due to having three participants and a larger sample size would be beneficial to apply a greater generalizability to a broader population.

Future Directions

The results from this project are informative pilot data that show potential positive impact for PII on maternal-infant utterances, parent-child communication and child language development. To understand more about the direct associations between PII and child language outcomes, a next important step would be to conduct a randomized, longitudinal trial comparing PII to a control group and examining long-term child language outcomes including parent-child communication outcomes. Language measurement should be expanded in future studies, both to incorporate language quantity measures, as was used in this study, as well as what Rowe, Pan, and Ayoub (2005) refer to as a quality language environment (i.e. tone, enrichment of language).

Another beneficial future direction would be to further explore how technology can be used to promote language development in children. As indicated in this study, video technology can be used to easily illustrate and model desired outcomes for parents. Understanding more about how such technologies can independently impact parent and child outcomes is warranted. Due to how easily disseminable it is, such technology could have a wide-reaching public health impact. Lastly, future work may benefit from continuing to include the evaluation of negative utterances, though the base rate of this outcome was low in this study. An initial assessment of this outcome with a child welfare population, where SafeCare is typically implemented, would prove beneficial.

Conclusions

This research represents the first effort to systematically record the impact of PII on maternal utterance quantity. The data show that prior to intervention, the dyads lacked consistent utterance skills that were subsequently improved with intervention. Since a

rich and positive language environment is linked to positive child outcomes (Hart & Risley, 1995), further examining how this outcome is impacted by widely disseminated home visiting programs is imperative.

Figures and Appendices

Figure 1. Results of Dyad A

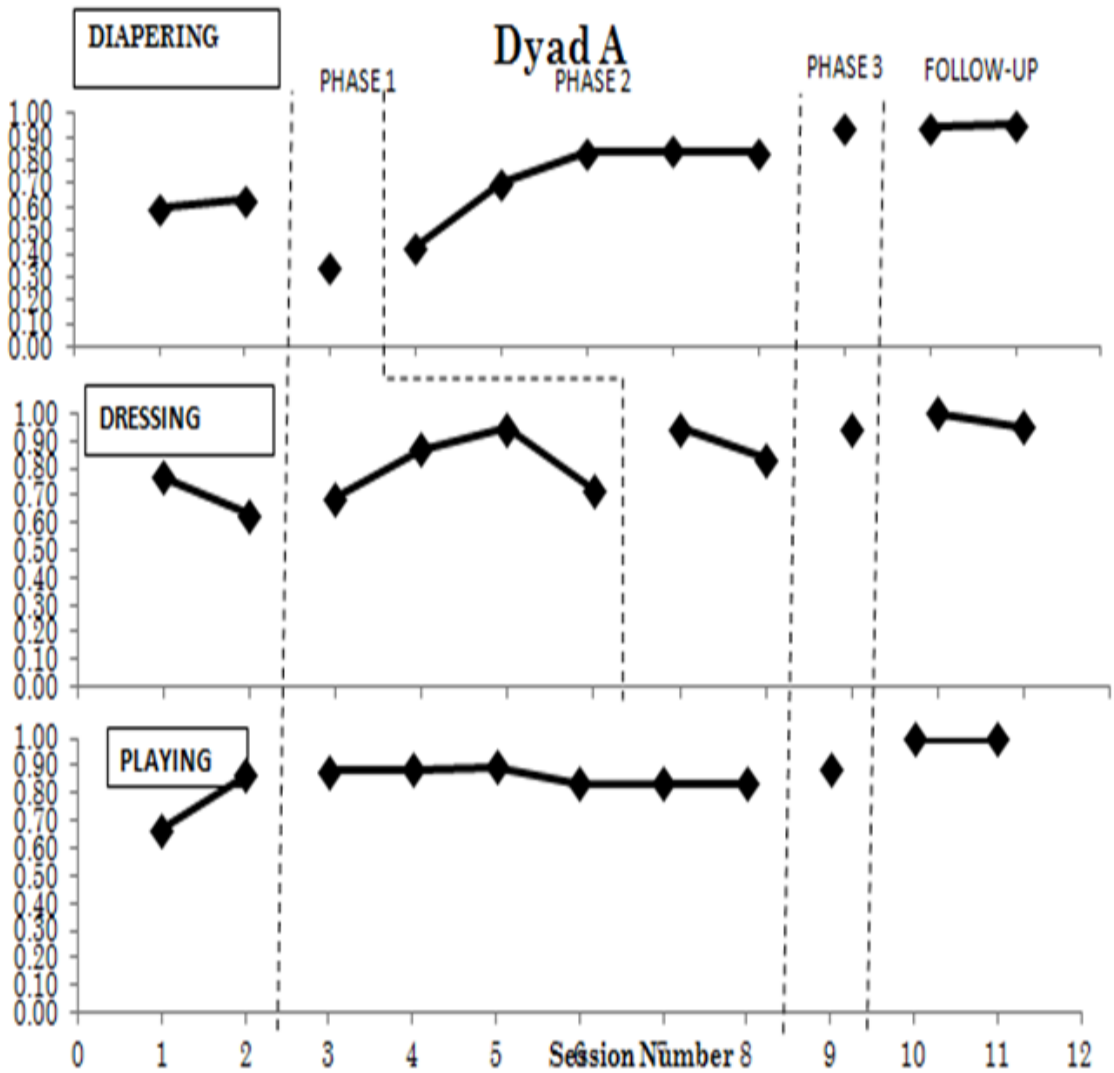


Figure 2. Results of Dyad B

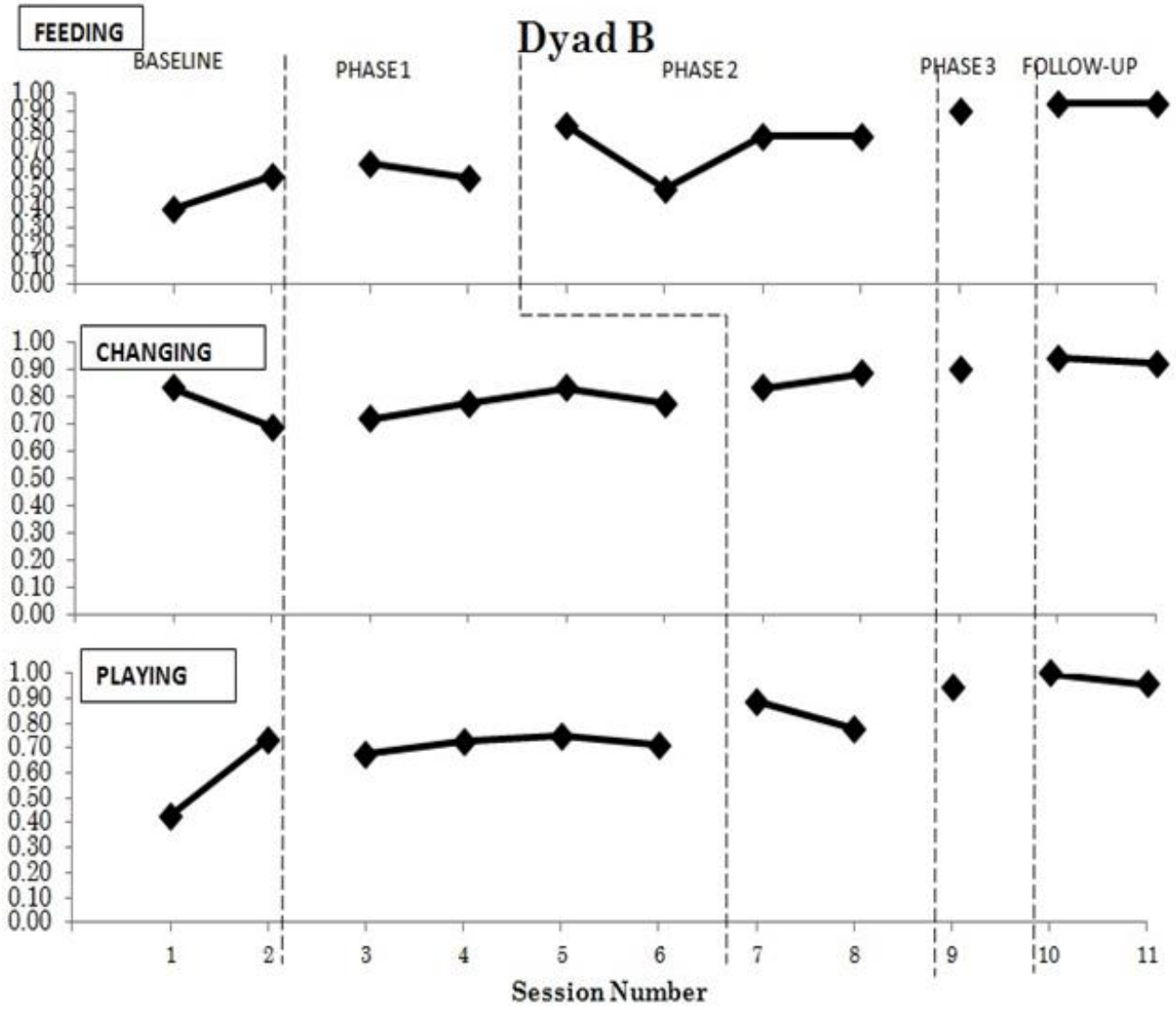
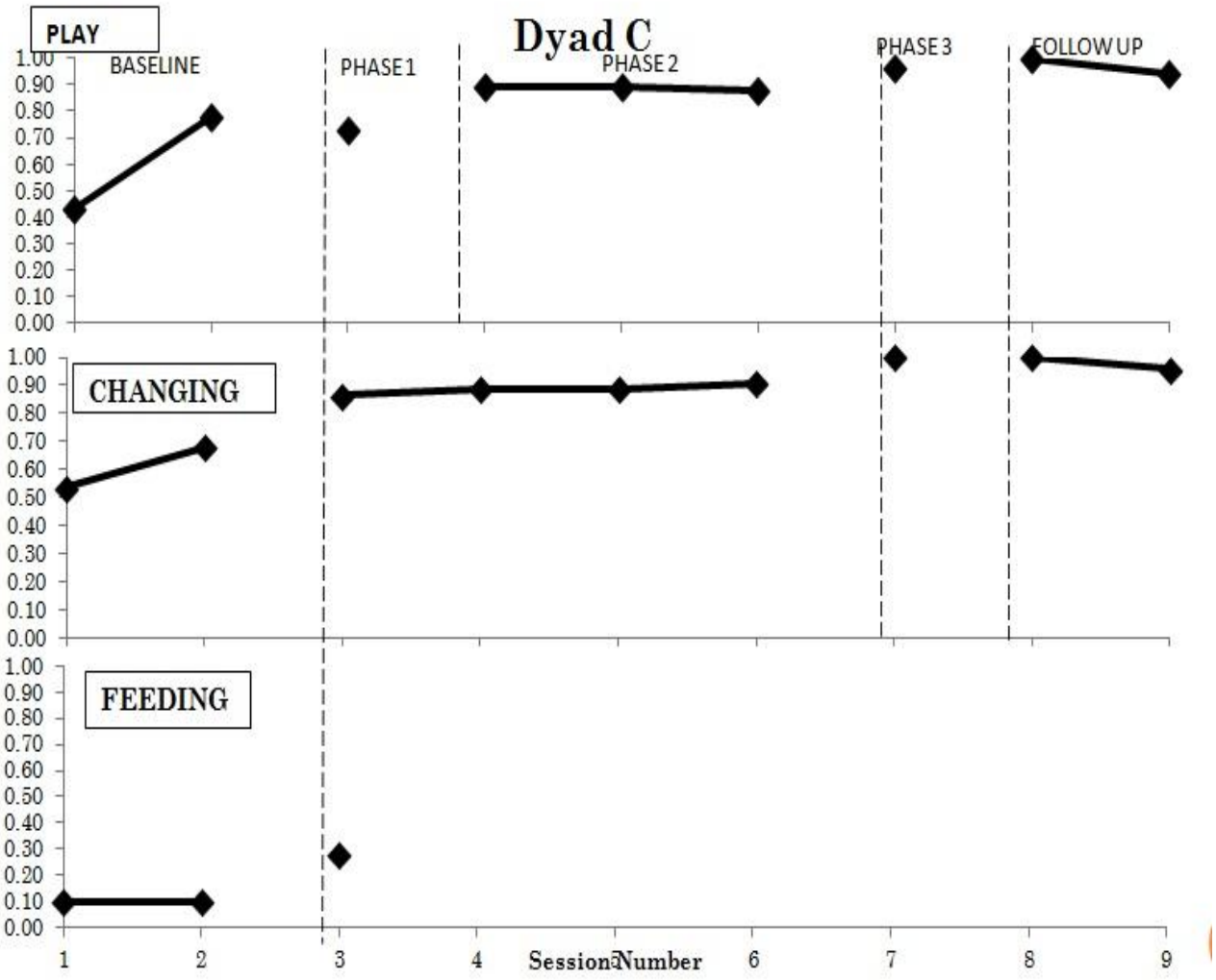


Figure 3. Results of Dyad C



Appendix 1: Daily Activities Checklist-Infant (DAC)

Daily Activities Checklist - Infant

Parent: _____ Home Visitor: _____ Date: ___/___/___
Child: _____Age: _____ Timing: Baseline Training Follow-up

Instructions: Identify situations in which you have had difficulty with your child's behavior and how much change you would like to see in your child's behavior or in the situation.

	Amount of Change Needed					Notes
Situation	**OK as is**		**Some Change**		**Great Change**	
Waking	1	2	3	4	5	
Getting dressed	1	2	3	4	5	
Meal times	1	2	3	4	5	
Meal preparation times	1	2	3	4	5	
Diapering	1	2	3	4	5	
Bath time	1	2	3	4	5	
When you are busy with chores, on the phone, etc.	1	2	3	4	5	
Getting ready to go out	1	2	3	4	5	
When you have visitors	1	2	3	4	5	
Play time	1	2	3	4	5	
Watching TV	1	2	3	4	5	
Getting ready for bed	1	2	3	4	5	
Bedtime	1	2	3	4	5	
Late evening	1	2	3	4	5	
Doctor/dentist	1	2	3	4	5	
Other appointments	1	2	3	4	5	
Shopping/errands	1	2	3	4	5	
Other outings: Specify:_____	1	2	3	4	5	
Leaving your child with someone else	1	2	3	4	5	
Other (specify) _____	1	2	3	4	5	

Appendix 2: Infant Plannned Activities Training plus Verbalizations Form (iPAT+V)

Infant Planned Activities Training+ Verbalizations—iPAT+V
Home Visitor Assessment Form

Parent/Infant _____ HV _____ Date _____

Activity _____

LoTTS of Bonding

Parent Behavior	Score	Notes
Looking		
Touching		
Smiling		
Talking Occurrence (+) Non-Occurrence (--)		

Interval	Positive	Negative	Interval	Positive	Negative
0:00-0:10			2:30-2:40		
0:10-0:20			2:40-2:50		
0:20-0:30			2:50-3:00		
0:30-0:40			3:00-3:10		
0:40-0:50			3:10-3:20		
0:50-1:00			3:20-3:30		
1:00-1:10			3:30-3:40		
1:10-1:20			3:40-3:50		
1:20-1:30			3:50-4:00		
1:30-1:40			4:00-4:10		
1:40-1:50			4:10-4:20		
1:50-2:00			4:20-4:30		
2:00-2:10			4:30-4:40		
2:10-2:20			4:40-4:50		
2:20-2:30			4:50-5:00		

✓+	Demonstrated the step/behavior consistently and with ease
✓	Needs improvement in ease and/or consistency of the step/behavior
—	Did not demonstrate step/behavior at all

Progress:
- ☐ *In Progress*
- ☐ *Success*
- ☐ *Mastery*

Other Bonding Behaviors *(Score the following behaviors when applicable)*

Parent Behavior	Score	Notes
Holding		
Imitating		
Rocking		

Negative Behaviors

Appendix 3: Example PII Tool Kit Session Outline

Session One: Baseline Assessment

PREVISIT PREP

Call before the session to remind parent of the activities you will observe based on the DAC and confirm best time.

SESSION GOALS

- Review the completed DAC and identified priority activities to assess
- Assess parent skills in 1 interactive play activity using one iPAT HV Assessment Form
- Assess parent skills in 2 interactive daily activities using two iPAT HV Assessment Forms
- Talk about infant development
- Talk about the 5 physiological states
- Discuss information about crying infants and Shaken Baby Syndrome

MATERIALS

- ✓ Completed DAC from previous session
- ✓ iPAT HV Assessment Form (3-4 copies)
- ✓ iCards
- ✓ iDevelop
- ✓ Toys for children to play with during session
- ✓ Doll for demonstration
- ✓ Photos of infants in different states

STEP-BY-STEP

4

1. Greeting
   - Exchange appropriate initial greeting with parent
   - Examples
     - *How has your week been?*
     - *Has there been any change in your family or your infant's behavior since the last session?*

2. Give module overview
   - *This module will help you increase your positive interactions with your baby and teach you new ways to help your baby learn and grow*
   - *Taking this time with your baby is an important part of being a parent*
   - *Babies need to be involved in interesting interactions and activities so that they can grow and learn*
   - *By playing with your baby and using engaging activities, you can make your relationship with your baby more positive*
   - *By interacting with your baby in a positive way, and talking to your baby during the activities that you do every day, like bath time, mealtime, and getting dressed, you will give your baby new chances for learning*

3. If applicable, complete DAC
   - If not done before session, complete the DAC with the parent
   - *Before we get started today, I would like to found out what routine activities with your infant you would like improvements*
   - Review which interactive daily activities are most stressful for the parent and decide in what order you will observe these activities with a play activity
   - NOTE: Do not include community behaviors among the ones you assess or address early on in training

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Appendix 4: Example iDevelop cards

Your Infant at 4 Months

Thinking/Problem Solving

- Lets you know if she is happy or sad
- Responds to affection
- Reaches for toy with one hand
- Uses hands and eyes together, such as in playing peek-a-boo
- Follows moving things with eyes from side to side
- Watches faces closely
- Recognizes familiar people and things at a distance

iDevelop 7

Your Infant at 4 Months

Movement/Physical

- Holds head steady, unsupported
- Pushes down on legs when feet are on a hard surface
- Brings hands to mouth
- Can hold a toy and shake it and swing and dangling toys
- When lying on stomach, pushes up to elbows

iDevelop 8

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