

The Effects of In-Service Training on Caregivers to Promote Language Development in Child Care Centers

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ABSTRACT: *Research Findings:* This exploratory study examines the outcomes of an in-service training program on the speech-language knowledge and skills of childcare providers in center-based environments. Providers at four childcare centers were assigned to one of two groups. Both groups participated in specialized training programs that focused on developmental milestones of speech-language development (birth to five years). One group was also presented with strategies to facilitate the speech-language development of the children they serve. All providers completed pre-post training objective written assessments to determine changes in knowledge as well as their perceptions regarding knowledge. Pre- and post-training videotapes of participants were collected to assess use of language facilitation strategies with the children. The data was coded and analyzed to determine 1) whether the providers demonstrated an increase in frequency and type of strategies following the in-service training and 2) whether there was a difference between the frequency and types of strategies used by participants in between groups. *Practice or Policy:* Findings indicate that a single-session in-service training program may facilitate an increase in childcare providers' knowledge and perceptions of knowledge regarding language development. A single session may not, however, be adequate to change providers' behaviors with the children in their care.

1 INTRODUCTION

The American Speech-Language-Hearing Association (ASHA) challenges the speech-language pathologist (SLP) to consider the following question: Should we educate others *about* what we do or to *do* what we do? Educating others about the roles and responsibilities of the SLP allows the professionals to reach clients who may benefit from services for which they may not be otherwise referred. In the arena of early childhood intervention, however, this may not be enough. SLPs assume various roles in addressing the concerns and priorities of families and their young children. These roles include consultation with team members and education of families and childcare providers. SLPs are expected to promote children's participation in their natural environments. In order to fulfill these expectations, based on the scope of practice for SLPs working in early childhood arenas (ASHA, 2008), SLPs need to teach others how to address the speech and language development of young children. This involves educating early childhood educators and childcare providers how to use SLP strategies with the children to whom they provide services within the context of natural environments—the childcare center. Early childhood educators and care providers are asked to have a complex understanding of child development and early education in order to provide meaningful educational experiences for the children in their care (Sheridan, Edwards, Marvin, & Knoche, 2009). Childcare providers are expected to monitor, encourage, and facilitate the growth and development of their charges by providing quality instruction through everyday activities and routines. The questions therefore arise: Are childcare providers capable of providing quality language-based services to those children for whom they care? How can they obtain the knowledge and skills in order to provide such services? If training is merited, on what should the SLP focus and does training have an impact on the knowledge needed by childcare providers to encourage such development? What role might the SLP play in regard to training childcare providers?

In-service training programs are typically composed of activities that are specific to early childhood programs and populations that take place beyond the formal education system. Training in in-service models provides specific skill instruction or skill building content for application by providers on the job site itself (i.e. in the childcare center) (Maxwell, 2006; Tout, Zaslow, & Berry, 2006). The efficacy of in-service training in center-based childcare environments is supported by empirical research that has examined the knowledge of providers, the quality of the providers' interactions, and their influence on children's language skills. Providers with more education present more language stimulation (Berk, 1985; Honig & Hirallal, 1998; Howes, James, & Ritchie, 2003) and stimulate the social skills of children more frequently throughout the day (Honig & Hirallal, 1998) than those with less education or training. Ghazvini & Mullis (2002) examined the relationship between years of initial education, specialized provider training, quality of caregiver-child interactions, and childcare quality ratings. The results of their study indicated that both general education level and professional de-

velopment (i.e. specialized training programs) after initial training are strong predictors of stimulating caregiver-child interactions as well as increased quality ratings. Burchinal and colleagues (2002) also demonstrated that both formal and informal training contribute to the quality of childcare. Additionally, Noris (2001) determined that family childcare providers who participate in continuous training offer higher quality care than providers who attend training intermittently or not at all. Based on these findings, it is therefore not surprising that training programs appear to be better predictors of the quality of childcare than provider age (Clarke-Stewart et al., 2002), work experience (Burchinal et al., 2002; Clarke-Stewart et al., 2002, Honig & Hirallal, 1998), professionalism (Clarke-Stewart et al., 2002), mental health (Clarke-Stewart et al., 2002), or stability of the childcare provider position (Honig & Hirallal, 1998). Furthermore, one study indicated that formal education and training were also stronger predictors of the quality of childcare than adult-child ratio and group size (Burchinal et al., 2002). In regard to developmental outcomes, several studies also demonstrate that, in childcare centers in which the providers have completed training, children have higher levels of language skills (Burchinal et al., 2002; Clarke-Stewart et al., 2002), social skills (NICHD ECCRN, 2002), and school readiness (NICHD ECCRN, 1999) than children at other centers.

Findings from multiple studies have demonstrated that one result of participation in quality childcare programs is improvement in children's receptive and expressive language skills (Goelman & Pence, 1987; Howes, 1997; McCartney, 1984). It is therefore of great importance that childcare providers are knowledgeable about and have the skills to stimulate and promote language development in their centers. According to Mroz and Hall (2003), however, only 16% of early childhood providers believe that they have received adequate training in the area of child language to provide quality services in this developmental domain. Forty-six out of fifty childcare providers who were interviewed expressed a need for training specifically in the area of speech and language. The providers noted that ideal content for this training would consist of identification of children with speech and language difficulties within the context of a basic introduction to speech and language development (Mroz & Hall, 2003).

Given these findings, an important question arises. Must the training of childcare providers be extensive in duration and/or complexity in order to have an impact on the providers' use of skills and on child outcomes? This question was addressed by a pilot study (Flowers et al., 2007) in which educators received a two hour in-service training that targeted literacy development of preschool children. The results indicated that the educators who received the training (experimental group) used a greater frequency of trained skills than those educators who did not receive any training (control group). Additionally, the children in the study provided more appropriate responses than did the children in the Group A. Educators did not, however, demonstrate skills at the highest level presented within their in-service session, indicating that further training may be merited. One can therefore conclude that efficient, shorter training programs in the arena of literacy development are effective to an extent. In light of limited budgets and time restraints, short in-service training programs therefore do provide participants with effective opportunities to learn and develop basic skills.

The current study examined the efficacy of a 1.5 hour and a 3.0 hour in-service training program in which language development milestones and language stimulation techniques were targeted. The primary purpose of this study was to determine if short in-service training programs can effectively increase childcare providers' knowledge regarding language development as well as their use of interactive language stimulation techniques with children in their care in center-based environments. This study focused on determining the viability of the in-service training model for center-based childcare environments and on identifying questions for future research on training that targets childcare provider-child interactions.

This study was conducted as an exploratory work because of the small sample size and its focus on childcare providers' knowledge and demonstration of specific skills regarding language development and stimulation strategies. Two research questions with significant potential clinical consequences were raised: What is the effectiveness of an in-service training program aimed at teaching center-based childcare providers knowledge and skills regarding language development and language stimulation strategies?

Does a 1.5 hour or 3.0 hour in-service training program aimed at teaching center-based childcare providers information regarding language development milestones and language facilitation strategies increase the quantity of different language stimulation strategies used by the providers when interacting with the children in their care?

2 RESEARCH METHODS

2.1 Hypotheses

Two pivotal hypotheses were assessed within this study:

Following multiple-hour in-service training programs, all childcare providers (Group A and Group B participants) demonstrate an increase in their knowledge of language development milestones and their perception of knowledge regarding language development in comparison to their knowledge and perception of knowledge prior to the training.

Childcare providers in Group B, who complete a 3-hour training that focuses on both language development milestones and strategies to facilitate language, utilize language facilitation strategies more frequently than childcare providers in Group A, who complete a 1.5-hour training that focuses only on language development milestones.

2.2 Method

2.2.1 Participants

Childcare Providers. A total of 23 childcare providers within four different childcare centers participated in in-service training component of the study. Fifteen childcare providers in two childcare programs (Group A) were provided with a 1.5 hour knowledge-based training session; eight childcare providers in two childcare programs (Group B) were provided with a 3.0 hour knowledge and skills-based training program. All providers were female. All providers were high school graduates with a minimum of one month of experience working at the childcare center in which they were currently employed (refer to Table 1 and Table 2 for the breakdown of participants' educational history and years of experience). Of the 23 childcare providers who received training, five from Group A and seven from Group B participated in the videotaped observation component of the study.

Table 1

Participants' Levels of Education

Education	Group A Participants (N=15)	Group B Participants (N=8)
High School/GED	9	1
Associate's Degree	1	4
Bachelor's Degree	3	3
Master's Degree	1	
Other	1	

Table 2

Participants' Years of Experience in Child Care Provision

Years of Experience	Group A Participants (N=25)	Group B Participants (N=8)
<2 years	4	2
2-5 years	2	2
6-10 years	6	1
11-15 years	1	1
16-20 years		1
20+ years	2	1

Children. Children were included as passive participants in this investigation. Children who were already enrolled in each providers care participated (unless their parents chose not to sign the consent) during the videotaped sessions. During each videotaped session, participating providers interacted with the children in both unstructured and structured activities in the center-based environment.

Trained observers. Two graduate students in the Department of Communication Sciences and Disorders who are monolingual, native American-English speakers served as observers and data collectors. They were trained to use the video equipment to collect the data and to code the samples.

2.3 Design and Procedure

The study was based on a pretest-posttest exploratory design with assignment to two groups. The principal investigator (PI) contacted area childcare centers via telephone to present the study to the directors. Four childcare centers in the southwest region of Virginia responded to the telephone queries with interest. In response to their interest, the PI conducted an on-site orientation session at each of the four centers to describe the in-service training and the research components of the program. Each participating childcare center then scheduled the in-service training program with the PI (who presented the program) and appointments for filming each of the childcare provider-child interactions (all of which occurred at the childcare centers). Within four weeks prior to the scheduled training program, one of the two trained graduate student assistants (GSAs) visited each of the centers and met the childcare providers, collected all consent forms (of both childcare providers and participating children), and filmed a total of 10 to 15 minutes of unstructured interactions between each of the participating childcare providers and the children whom they served. Within four weeks following each of the scheduled in-service training programs, one of the two GSAs returned to each of the centers to film a total of 12 to 15 minutes of unstructured interactions between each of the participating childcare providers and the children whom they serve.

2.4 *In-service Training Program*

All four of the participating centers were provided with the in-service training program within two months of the initial orientation meeting. The in-service training program for Group A focused on evidence-based language development milestones (birth to five years). The in-service training program for Group B was based on a combination of evidence-based language development milestones (birth to five years) and the basic principles of The Hanen Centres It Takes Two to Talk program (Manolson, 1992), a well-known model of in-service education for parents of young children with communication concerns, as well as practical and specific strategies to facilitate and stimulate language development during both structured and unstructured activities. The Group B in-service training program was approximately three hours in duration. The Group A in-service training program, approximately 1.5 hours in duration, was a replica of the Group B program, with the exception of the language stimulation strategies component. Immediately prior to and following the training programs, all participants completed an objective written assessment evaluating their knowledge regarding language development and expected speech and language milestones for children between birth and five years of age. Both groups also completed written assessments assessing their self-perceptions regarding language development milestones, and ability to facilitate speech and language with the children in their care. Group B participants also completed an objective written assessment evaluating their knowledge regarding language facilitation strategies at post-training. At the completion of the study period, providers in Group A were offered an additional in-service program with a focus on the language stimulation strategies that were omitted from the initial program. Neither of the Group A childcare centers opted to participate in a second in-service training program.

2.5 *Measures*

A questionnaire was developed and utilized to obtain data regarding the childcare providers demographics, pre-post training knowledge, and pre-post training perceptions regarding their own knowledge in the area of language development:

1. **Demographic Profile** This instrument was created in order to obtain a description of the sample and to facilitate generalization of the results. The profile included questions regarding the childcare providers age, gender, level of education, and years of experience. These demographics were collected in order to determine whether there was a relationship between these factors and childcare pre-in-service training knowledge or their perceptions regarding their own knowledge and skills in regard to language development.
2. **Pre-post Knowledge Assessment** included a series of five true/false statements that were based specifically on the information that was presented within both in-service programs. The statements focused specifically on language development milestones and expectations for children between the ages of birth to five years.
3. **Pre-post Perceptions of Knowledge Assessment** included five items with Likert 1-5 scale responses. The total possible scores range from a low of 1 point to a high of 25 points, with higher scores indicating greater perceptions of language development knowledge. The total score was averaged to generate a mean score from 1 to 5, again with higher scores indicating greater perceptions of knowledge in regard to language development. As total scores and mean scores do not correspond with rankings of perception of knowledge, there is no way to determine whether, for example, a total score of 15 indicates low self-perception or high self-perception of knowledge. Instead, the score should be interpreted based on distributions of scores among all participants and differences between pre-training scores and post-training scores.

The pre and post-training videotaped interactions between the childcare providers and the children were coded to yield data regarding provider language stimulation behaviors. These behaviors were derived and adapted from the Teacher Interaction and Rating Scale (Weitzman & Greenberg, 2002). Of the 11 items on the scale, four verbal and nonverbal strategies used by childcare providers within caregiver-child interactions were targeted for observation, coding, and assessment. The items included: Follow the Childrens Lead, Scan the Environment and the Children In the Area, Use a Variety of Labels, and Expand (by repeating the childrens words and correcting grammar or adding another idea). Each of these strategies was rated in both the pre-training and post-training videotaped interactions of the 12 childcare providers who participated in both the pre- and post-videotaping component. The childcare providers were rated on a 7-point frequency response scale to judge how frequently each used the four specific strategies (1= rarely, 3= sometimes, 5=frequently, 7=consistently).

2.6 *Data Analysis*

All data was coded to protect participant identities and has been stored on a password protected office computer with original data kept in a locked cabinet in the principal investigators research laboratory. The data from the pre- and post-training videotapes was then coded and entered into a Windows 2010 Excel spreadsheet. The demographic data and the pre-training and post-training written assessment data was also coded, and entered into a Windows 2010 Excel spreadsheet. Parametric methods, including paired t-test and two sample independent t-test, were performed to determine whether there was any difference regarding the mean performance in both Group A and Group B. Testing for the normality of data using goodness of fit tests and the homogeneity of variance, including the Anderson-darling normality test, Shapiro-Wilk normality test and Levene's Test, was conducted to guarantee the assumption of the previous tests could be met. Non-parametric analytical tests, including the Mann-Whitney U test and the Wilcoxon signed-rank test, were

conducted as back up tests when the data failed to pass the assumption tests. Through these tests, we determined whether the outcomes of childcare providers in Group A and Group B were comparable. We used a 0.1 level of significance to test the hypotheses.

3 Results

The results are presented in four sections: (a) pretest-posttest comparisons of Group A and Group B of childcare provider knowledge, (b) pretest-posttest comparisons of Group A and Group B of childcare provider perceptions of knowledge, (c) pretest-posttest comparisons within Group B of childcare provider knowledge regarding language facilitation strategies, and (d) pretest-posttest comparisons of Group A and Group B use of language facilitation strategies.

3.1 *Childcare provider knowledge of developmental milestones*

In Group A, a series of Anderson-Darling normality tests show that pre and post in-service training scores based on knowledge of developmental milestones are not normally distributed with a p-value 0.0052 and 8.01E(-12). A Shapiro-Wilk normality test verifies these conclusions. Based on the result of Levenes test, we can conclude that pre and post in-service training knowledge scores do not have homogenous variance with a p-value 0.023. Therefore, we cannot use parametric analysis such as a paired t-test for this comparison and we need to conduct a non-parametric analysis. The results of a Wilcoxon Signed rank test indicate that these providers significantly improved their knowledge regarding language development milestones following the in-service training, with a p-value of 0.001723. In Group B, Anderson-Darling normality tests show that pre and post in-service training scores based on knowledge of developmental milestones are not normally distributed with a p-value 8.014E(-12) and 0.00098. A Shapiro-Wilk normality test verifies these conclusions. Based on the result of Levenes test, we can conclude that pre and post in-service training knowledge scores do not have homogenous variance. Therefore, we cannot use parametric analysis such as paired t-test for this comparison and need to conduct a non-parametric analysis. The results of a Wilcoxon Signed rank test indicate that the providers in Group B did significantly improve their knowledge regarding language development milestones following the in-service training, with a p-value of 0.06835. There is a statistically significant difference between pre-training participant knowledge and post-training participant knowledge regarding language development milestones (based on the comparisons between the pre-training written assessment results and the post-training written assessment results) for both Group A participants and Group B participants.

Comparison between Group A and Group B childcare providers knowledge of developmental milestones

Based on the previous results, we determined that both Group A and Group B data do not follow normality; therefore, we used an independent non-parametric analysis method called a Mann-Whitney U test. Based on the Mann-Whitney test results, we can conclude that providers in Group B did not perform significantly better than Group A on the post-training knowledge assessment, with a p-value of 0.9718.

3.2 *Childcare provider perceptions of knowledge regarding developmental milestones*

In Group A, Anderson-Darling normality tests show that pre and post in-service training perception of knowledge scores are not normally distributed, with p-values of 0.002617 and 0.0011. A Shapiro-Wilk normality test verifies these conclusions. Based on the results of Levenes test, we can conclude, however, that pre and post in-service training perception of knowledge scores do have homogenous variance, with a p-value of 0.344. Based on the conditions, we cannot use parametric analysis, such as a paired t test, for this comparison and need to instead conduct non-parametric analysis. The results of a non-parametric Wilcoxon Signed rank test indicate that the providers in Group A significantly improved their perceptions regarding their knowledge following the in-service training, with a p-value of 0.001775.

In Group B, Anderson-Darling normality tests show that pre and post in-service training perception of knowledge scores are not normally distributed with p-values of 0.0008413 and . A Shapiro-Wilk normality test verifies these conclusions. Based on the result of Levenes test, we can conclude that pre and post in-service training perception of knowledge scores do have homogenous variances. Therefore, we cannot use parametric analysis, for this comparison. A Wilcoxon Signed rank test indicates that the providers in Group B did significantly improve their perceptions regarding their knowledge following the in-service training, with a p-value of 0.009611. There is a statistically significant difference between pre-training and post-training perceptions of participant knowledge regarding language development milestones for both Group A participants and Group B participants.

Comparison between Group A and Group B childcare provider perceptions of knowledge regarding developmental milestones

Based on the above results, we know that data in both Group A and Group B do not follow normality; therefore, we used an independent non-parametric analysis method called the Mann-Whitney U test. While we have determined that providers in both groups improved their perceptions regarding knowledge of language development following the in-service trainings, we can conclude that when comparing groups, providers in Group B performed significantly better than providers in Group A, based on a p-value of 0.05033, regarding their perceptions of knowledge following the in-services.

3.3 *Childcare providers knowledge regarding language facilitation strategies presented in Group Bs in-service training*

Anderson-Darling normality tests show that pre and post in-service training scores demonstrating childcare providers knowledge regarding language facilitation strategies follow normal distribution with p-values 0.3051 and 0.08758. A Shapiro-Wilk normality test verified these conclusions. Based on the result of Levenes test, we have determined that pre and post in-service training scores, focused on the childcare providers knowledge regarding language facilitation strategies, do have homogenous variance with a p-value of 0.3504. A two sample paired t-test indicates that the childcare providers in Group B, who received the additional training regarding language facilitation strategies, did significantly improve their knowledge regarding the strategies with a p-value of 0.01657.

3.4 *Analysis of the Use of Strategies by Childcare Providers*

Since the sample size of those participants who were videotaped engaging with children under their care was small (in group A the sample size is 5; in group B the sample size is 7), performing normality tests for these two groups data is not considered meaningful. We conducted the normality tests regardless of sample size, however, in order to determine whether the use of parametric tests would increase our power of the study.

Strategy: Follow the Childs Lead

Group A childcare providers use of strategies to facilitate language. The mean score (based on a 7-point frequency response scale), indicating the frequency with which this strategy was used, was 1.6 prior to the training and 2.8 following the training. Although these means indicate a 75% increase in use of the strategy (to follow the child's lead) following the training, the results of a Wilcoxon Signed rank test, with a p-value of .1346, indicate that the providers in Group A did not improve their scores significantly when comparing their use of strategies prior to and following the training. Group A did not receive any training specific to the use of these strategies.

Group B childcare providers use of strategies to facilitate language. The mean score for Group B participants, indicating use of this strategy, was 4.571 prior to the training and 4.857 following the training. These means indicate a 6.25% increase in use of the strategy (to follow the child's lead) following the training. The results of a Wilcoxon Signed rank test, with a p-value of .263, indicate that the providers in Group B did not improve their scores significantly when comparing their use of strategies prior to and following the training. Group B participants received specific training regarding the use of these strategies.

Comparison between Group A and Group B childcare providers use of strategies. A Wilcoxon Signed rank test was used to compare the post-training scores of Group A to Group B in regarding of the strategy. The resultant p-value of .05037 indicates the participants in Group B did use this strategy (following the child's lead) significantly more often when communicating with their children in comparison to participants in Group A.

Strategy: Scan the Activities of the Child(ren)

Group A childcare providers use of strategies to facilitate language. A Wilcoxon Signed rank test was used to compare the post-training scores of Group A. The mean pre-training scores of participants was 1.6; the mean post-training score was 3.8. With a p-value of .02895, the Group A participants improved their scores significantly following the training program.

Group B childcare providers use of strategies to facilitate language. A Wilcoxon Signed rank test was used to compare the post-training scores of Group B. With a p-value of 1.0, the participants did not demonstrate a significant change in their scores, relative to use of the scanning strategy, following the in-service training program. With a mean pre-training score of 3.0 and a mean post-training score of 2.857, the Group B participants demonstrated a 4.77% decrease in the frequency of the participants use of scanning following the training.

Comparison between Group A and Group B childcare providers use of strategies

A Wilcoxon Signed rank test was used to compare the post-training scores of Group A to Group B. With a p-value of .2472, the participants in Group A did not improve their scores significantly more than participants in Group B.

Strategy: Use a variety of labels when communicating with the children

Group A childcare providers use of strategies to facilitate language. The participants mean pre-training score was 1.2; their post-training mean score was 2.4 in regard to the participants use of labels. A Wilcoxon Signed rank test was used to compare the pre- and post-training scores of Group A. With a p-value of .06811, the participants in Group A demonstrated significant improvement in the frequency with which they used a variety of labels when communicating with the children in their care.

Group B childcare providers use of strategies to facilitate language. The mean pre-training score was 3.714 and the mean post-training score was a 4.214 for Group B participants use of labels when communicating with the children in

their care. There was a 13.46% increase in the participants use of strategies following the training. A Wilcoxon Signed rank test with a p-value of .1504 indicates that the childcare providers in Group B did not demonstrate a statistically significant increase in use of this strategy following the training.

Comparison between Group A and Group B childcare providers use of strategies. A Wilcoxon Signed rank test was used to compare the post-training scores of Group A to Group B in regard to use of labels when communicating with the children in their care. The resultant p-value of .02046 indicates the participants in Group B demonstrated a significant increase in the frequency of use of this strategy in comparison to participants in Group A.

Strategy: Expanding the child's utterance

Group A childcare providers use of strategies to facilitate language. The mean pre-training score was 1.4 and the mean post-training score was a 3.0 for Group A participants use of expansions. There was a 114.3% increase from the participants use of strategies prior to the training and their use of strategies following the training. Despite the increase in their use of strategies between pre- to post-training, a Wilcoxon Signed rank test with a p-value of .1382 indicates that the childcare providers in Group A did not demonstrate a statistically significant increase in use of strategies following the training.

Group B childcare providers use of strategies to facilitate language. The mean pre-training score was 2.928 and the mean post-training score was a 3.5 for Group B participants use of expansions. There was a 19.5% increase from the participants use of strategies prior to the training and their use of strategies following the training. Despite the increase in their use of strategies between pre- to post-training, a Wilcoxon Signed rank test with a p-value of .2753 indicates that the childcare providers in Group B do not demonstrate a statistically significant increase in use of strategies following the training.

Comparison between Group A and Group B childcare providers use of strategies. The mean post score for group A is 3.0 and mean post score for group B is 3.5. Group B demonstrated the use of this strategy with 16.7% greater frequency than Group A. A Wilcoxon Signed rank test was used to compare the post-training scores of Group A to Group B. Despite these differences, a p-value of .3695 indicated the participants in Group B did not increase the frequency with which they used this strategy (i.e. expanding the child's utterance) significantly more than those in Group A.

4 Discussion

Overall, the findings indicate that, while a single-day in-service training program may be adequate to increase *perceptions of knowledge* and *knowledge* itself regarding language development by childcare providers, a single-day in-service training program may not be adequate enough to facilitate a significant increase in the overall use of language development strategies by childcare providers.

The results of this study indicate that the child care providers who participated in both of the in-service training programs increased their knowledge regarding language development milestones. Although all participants demonstrated statistically significant increases in their knowledge regarding language development milestones between pre and post in-service trainings, participants in Group B, who participated in the 3.0 hour training, performed slightly better than those in Group A, who participated in the 1.5 hour training. Group B participants earned a post-training mean of 97% (out of a possible 100%) while Group A participants earned a post-training mean of 90%. The data also indicate that participants in both groups significantly improved their perceptions of their knowledge between pre and post in-service trainings. Group B providers demonstrated an overall stronger outcome (from an average of 3.5 to 4.3) than Group A providers in their perceptions of knowledge between pre- and post- in-service training, although participants in Group A demonstrated a greater pre-post increase (from an average of 2.06 to 3.7). Additionally, participants in Group B demonstrated a significant increase in their knowledge regarding the use of language development facilitation strategies following the 3hour training. These results indicate that even a short training program can result in an increase in ones knowledge and perception of knowledge regarding language development and use of strategies to facilitate language in young children. It may simply be the perception of learning that results in the increase in perception of knowledge. According to Mroz and Hall (2003), childcare providers want training that addresses basic speech and language development. Perhaps providing childcare providers with a basic, multi-hour training on language development to increase their knowledge base is enough to increase the providers perceptions regarding their own knowledge and skills as well. These results also support the findings of Fukkink and Lont (2007), who conducted a meta-analysis of specialized training programs for early childhood educators. The results of their analysis indicated that specialized training does improve the attitudes, knowledge, and skills of early childhood teachers. Some research also indicates that training in early childhood development and practices is positively related to providers sensitivity of and language enrichment in their interactions with children (Clarke-Stewart, Vandell, Burchinal, O'Brien, & McCartney, 2002; Dickinson & Caswell, 2007). Therefore, it is possible that providing childcare providers with training specific to speech and language development and increasing their knowledge and perception of knowledge may result in a positive enhancement in their practices with children in their care. It is also worth noting that the longer of the two in-service

trainings resulted in stronger outcomes. Based on the higher scores of Group B in comparison to the scores of Group A in regard to knowledge and perception of knowledge, a 3 hour in-service training session may have a greater impact on provider learning than a 1.5 hour in-service training session.

Several considerations must be taken into account when comparing data between the participants in Group A and those in Group B. The data collected from the demographic profile indicated the participants in Group B reported greater levels of education and more frequent training, prior to these in-service trainings, than those participants in Group A. It also appeared that the level of attention to and interest in content within the training sessions may have been impacted by the support for the providers to participate in the sessions. The two centers in Group B chose to host the training program during the work day. The centers directors allowed the childcare providers to participate in the training in lieu of their childcare duties and provided substitute teachers for their classrooms. The participants in Group B were also allowed and encouraged to use the hours spent in the training program toward the centers continuing education requirements. The directors of the Group B centers reported that they provide frequent continuing education opportunities and training programs. Conversely, the two centers in Group A held the training programs at the end of the work day; no incentives were provided to the childcare providers who participated. The directors of the Group A centers reported that the providers are typically required to seek out their own continuing education opportunities and that they infrequently support training programs that interfere with the centers scheduling needs. Overall, the childcare providers in Group B earned stronger pre- and post-training scores on the knowledge tests and the perception of knowledge tests than providers in Group A. These results are consistent with the findings of several previous studies that indicate that providers with more education are more aware of the developmental needs of the children in their care (Berk, 1985; Honig & Hirallal, 1998; Howe, James, & Ritchie, 2003). Additionally, these results may support previous research by Burchinal and colleagues (2002) that there is a relationship between level of support by childcare center directors in regard to formal and informal training and providers investment in learning the material within in-service training sessions to provide quality childcare services.

The participants demonstrated inconsistent change in the frequency of their use of language facilitation strategies in the classroom. Overall, the data indicated that the participants demonstrated limited statistical change between pre- and post-training in regard to the frequency with which they used the strategies that were presented in the Group B training. Group A was not presented with training that focused on the use of strategies; however, despite the fact that change between pre-post training was not statistically significant, participants in Group A demonstrated increases in the use of all four targeted strategies. In regard to the strategy, Follow the Childs Lead, participants in Group A demonstrated a frequency response mean pre-training of 1.6 with a frequency response mean post-training of 2.8, indicating a 75% increase in the use of this strategy following the training that they received. When Scanning the Activities of the Children, participants in Group A demonstrated a pre-training frequency response mean of 1.6 with a post-training frequency response mean of 3.8, indicating another large increase in the use of this strategy following the training. In addressing the strategies to Use a Variety of Labels and Expanding the Childs Utterance, the Group A participants increased the pre-training frequency response means of 1.2 and 1.4, respectively, to post-training frequency response means of 2.4 and 3.0, respectively. Although these results are not statistically significant, they are important. When the participants in this group were provided with basic information regarding language development, their knowledge and perception of knowledge in this arena increased on a statistically significant level. Despite the fact that they were not provided with details regarding the strategies that are typically used to target language facilitation, their increased knowledge and perception of knowledge subsequently improved their awareness of the importance of addressing the language needs of the children in their care. Subsequently, the frequency with which they used these basic strategies increased as well.

There are a variety of conclusions to consider to explain why the Group B providers increased their knowledge and perception of knowledge but did not consistently improve the frequency with which they used the language facilitation strategies. According to Joyce and Showers (2002), more effective training programs aim to ensure opportunities for providers to practice targeted skills within the training setting; Maloney and colleagues (1975) also determined that providing feedback regarding the practice of new skills or strategies, either immediately or later in the job setting, have an impact on the efficacy of the training program. Furthermore, studies have demonstrated that practice and role playing of strategies within training programs and individualized feedback are important phases in increasing the effectiveness of training opportunities (Blas, Fixsen, & Phillips, 1984; Joyce & Showers, 2002; Kealey, Peterson, Gaul, & Dinh, 2000). Because of the time limitations of the in-service training program as well as the study itself, the opportunities to embed practice opportunities and to provide feedback to the participants was also limited and may have had an impact on the participants successful use of the strategies.

Although the Group B participants demonstrated increases between the pre-post training frequency response means for the strategies to Follow the Childs Lead, Use a Variety of Labels, and Expand the Childs Utterances, the difference between pre- and post-training scores were much less dramatic than those of the Group A participants. The reason for this outcome may be that the Group B participants entered into the training with a greater level of knowledge and skill in

the use of language development facilitation strategies and therefore used the strategies with greater frequency prior to the training itself. As stated earlier, these participants had, on average, higher levels of education and had been provided with more consistent training through their centers than those participants in Group A. As such, their pre-training frequency response score means for the use of the strategies ranged from 2.928 to 4.751 (versus the Group A range of 1.2 to 1.6). These pre-training scores are clearly much higher than the pre-training scores of the Group A participants. The learning curve of the Group B participants may have simply been shorter than the learning curve of the Group A participants. The lack of significant results may also be due to the limited number of participants in the videotaped component of the study. Only twelve participants were involved in the pre-post strategies component of this study and a double blind test was not utilized. It is possible that a greater database could result in statistically significant results. On the other hand, it is possible that the length of the in-service training sessions, including the 3-hour session conducted with Group B participants, was not adequate to facilitate the use of the language-based strategies. While the providers all demonstrated an increase in knowledge and perception of knowledge, they were unable to carry over their knowledge into practice on a statistically significant level. More extensive training may need to be provided in order to support the use of such strategies in practice.

5 Limitations

Several limitations must be noted in interpreting the findings of this exploratory study. First, we did not have an unbiased population based sample. Childcare centers volunteered for the study, which may help explain the discrepancies in administrative support and the efforts of each center to provide continuing education to their providers. In future trainings it will be important to match the groups on a variety of variables, including previous continuing education opportunities, support from center administration, childcare provider education level, and socioeconomic level of the children served.

There are limited options in terms of observation-based assessments used to determine the knowledge and/or use of strategies to facilitate speech-language development/skills of childcare providers in center-based locations. This limitation extends to the present study. The pre-post training assessment, used within the training in-service to assess participant knowledge and perceptions regarding knowledge, as well as the observation checklist and scale used to observe and assess the childcare providers with the children in their care, were created specifically for this study. They were not standardized and provided only a brief snapshot of knowledge obtained and strategies used by each provider. In light of the psychometric limitations of the tools used in the present study, we attempted to thoroughly describe all of the index questions.

Based on the trained observers observations and verbal comments presented by the childcare providers during the in-service training program, there was a lack of communication between the directors and childcare providers in two of the four childcare centers (both in Group A). Despite the commitment that was made by the childcare directors, several of the childcare providers at both of the centers in Group A were not consistently available or prepared for pre- and post-taping sessions. This lack of preparation may have resulted in skewed results between the pre- and post-taping, secondary to inconsistent engagement of activities during some of the taped sessions (e.g. one of the taped sessions consisted of the children transitioning from one activity to another and cleaning up toys rather than engaging in any form of play).

Additionally, providers were unsure of how to participate with the children during the 10 minute segment of interaction filmed. During the 10 minute filmed segment the providers frequently moved around the room and interacted with a variety of children. This led to a lack of agreement between raters. The results of this study therefore suggest that the providers use of program strategies may be influenced by the context of the interaction with the children; in future studies, the contexts in which the videotaped interactions occur should be pre-determined and set up (e.g., reading a book, playing with play dough) for both pre- and post-videotaping.

It is also important to consider the level of training the providers received over the course of their careers, prior to the study's in-service training program. Based on their continuing education expectations and requirements for employment, both centers in Group B required that their providers participate in frequent continuing education activities. The directors at each site supported their providers requirements for continuing education by providing frequent on-site educational opportunities throughout the year. The participants in Group B had greater opportunities for expanding their knowledge and skills regarding child development, early childhood education practices, and the implementation of language-rich environments in childcare provision, prior to their participation in this study. The providers in Group B also appeared to use multiple language stimulation strategies in the pre-training videotaped sessions. Their skills, therefore, may have led to the statistically insignificant difference between the use of different language facilitation strategies pre- and post-training since they demonstrated greater frequency of the use of strategies that were assessed prior to the training itself. If the groups had been more evenly matched in terms of education and level of support prior to the study, more conclusive results may have been observed. Although these limitations should not be overlooked, we reiterate that our findings serve to provide an initial step in increasing our knowledge in this understudied area.

6 Implications and Conclusion

The present study was conducted in order to determine whether a short in-service training program could effectively increase childcare providers knowledge regarding language development and their use of interactive language stimulation techniques with children with whom they work in center-based environments. Taken together, the results of this study provide an important contribution to the literature in that little is known about the efficacy and outcomes of providing childcare providers with short, single in-service training programs in the area of speech and language development and language facilitation strategies. This exploratory study has provided us with some interesting information regarding language development training. The statistically significant increase in providers knowledge as well as their perceptions regarding their knowledge of language development and language facilitation strategies may result in an increase in their awareness of language acquisition among the children whom they serve. The increase in their awareness could potentially serve as a screening measure, providing the childcare providers with increased acuity to recognize when a child in their care is not meeting expected speech and language milestones. Childcare providers may also be more confident in their knowledge and subsequently be more likely to bring their concerns to the attention of the childcare director or to the childrens primary caregivers. They may also be more likely to recommend that the primary caregivers contact speech-language pathologists to formally screen and/or assess the childrens needs. Prior to the training program, the childcare providers may not have recognized a concern or trusted their own knowledge to indicate that a referral for additional services was warranted. The statistically significant increase in the providers actual knowledge regarding language development milestones may also result in an attempt by the providers to promote language development in their daily activities, routines, and interactions with the children in their care. Regardless of the specific strategies that they may employ, an increased emphasis on speech and language will naturally facilitate social interactions and overall communication skills between the caregivers and the children.

The present studys findings indicate an in-service training program aimed at teaching center-based childcare providers knowledge and skills regarding language development and language stimulation strategies can be an effective use of the childcare providers time. This study further confirms that a multiple-hour in-service training program, aimed at teaching center-based childcare providers about language development milestones and language facilitation strategies, can have a positive effect on the knowledge and perception of language stimulation strategies by the providers when interacting with the children in their care. Further research is merited, however, to determine whether a limited, multiple-hour training program has any impact on providers actual use of language facilitation strategies.

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REFERENCES

- [1] American Speech-Language-Hearing Association. *Roles and Responsibilities of Speech-Language Pathologists in Early Intervention: Position Statement*, (2008), Available from www.asha.org/policy
- [2] L.E. Berk, *Relationship of caregiver education to child-oriented attitudes, job satisfaction, and behaviors toward children*, *Child Care Quarterly*, (1985), 14 (2), 103-129.
- [3] K. Blase, D. Fixsen, and E. Phillips, *Residential treatment for troubled children: Developing service systems.*, In Paine S., Bellamy G., & Wilcox B. (Eds). *Human services that work: From innovation to standard practice.*, Baltimore, MD: Paul H. Brookes Publishing. (1984)
- [4] M.R. Burchinal, D. Cryer, and D.M. Clifford, *Caregiver training and classroom quality in child care centers.*, *Applied Developmental Science*, (2002), 6 (1), 87-105.
- [5] K.A. Clarke-Stewart, D. Vandell, M. Burchinal, M. O'Brien and K. McCartney, *Do regulable features of child-care homes affect children's development?*, *Early Childhood Research Quarterly*, (2002), 17, 52-86.
- [6] K. Cole and P. Dale, *Direct language instruction and interactive language instruction with language delayed preschool children: a comparison study.*, *Journal of Speech and Hearing Research*, (1986), 29 (2), 206-17.
- [7] D. Dickinson and L. Caswell *Building support for language and early literacy in preschool classrooms through in-service professional development: Effects of the Literacy Environment Enrichment Program (LEEP).*, *Child Care Quarterly*, (2007), 22, 243-260.
- [8] H. Flowers, L. Girolametto, E. Weitzman and J. Greenberg, *The effects of in-service education on the promotion of story comprehension and early literacy skills.*, *Journal of Speech-Language Pathology and Audiology*, (2007), 40.
- [9] R. Fukkink and A. Lont *Does training matter? A meta-analysis and review of caregiver training studies.*, *Early Childhood Research Quarterly*, (2007), 22, 294-311.
- [10] A. Ghazvini and R.L. Mullis *Center-based care for young children: Examining predictors of quality*, *The Journal of Genetic Psychology*, (2002), 163 (1), 112-125.
- [11] L. Girolametto, E. Weitzman, P. Lefebvre and J. Greenberg *The Effects of In-Service Education to Promote Emergent Literacy in Child Care Centers, A Feasibility Study.* *Language, Speech, and Hearing Services in the Schools*, (2007), 38, 72-83.
- [12] L. Girolametto, E. Weitzman and J. Greenberg *Training day care staff to facilitate children's language*, *American Journal of Speech-Language Pathology*, (2003), 12, 299-311.
- [13] H. Goelman and A. Pence *Some aspects of the relationships between family structure and child language development in three types of day care.*, *A Feasibility Study. Language, Speech, and Hearing Services in the Schools*, (1987), 2, 129-146.
- [14] A.S. Honig and A. Hirall *Which counts more for excellence in childcare staff years in service, educational level or ECE coursework?*, *Early Child Development and Care*, (1998), 145, 31-46.
- [15] C. Howes *Children's experiences in center-based child care as a function of teacher background and adult: child ratio*, *Merrill-Palmer Quarterly*, 43 (3), 404-425.
- [16] C. Howes, J. James and S. Ritchie *Pathways to effective teaching*, *Early Childhood Research Quarterly*, (2003), 18, 104-120.
- [17] K. Kealey, A. Peterson, M. Jr Gaul and K. Dinh *Teacher training as a behavior change process: Principles and results from a longitudinal study*, *Healthy Education Behavior*, (2000), 27, 6481.
- [18] D. Maloney, E. Phillips, D. Fixsen and M. Wolf *Training techniques for staff in group homes for juvenile offenders*, *Journal of Criminal Justice and Behavior*, (1975), 2, 195-216.
- [19] L. Maxwell *Using environment-behavior research to inform parent education and early childhood caregivers training programs*, Atlanta, GA: Environmental Design Research Association., (2006)
- [20] K. McCartney *Effect of quality of day care environment on children's language development.*, *Developmental psychology*, (1984), 20(2), 244-260.
- [21] M. Mroz and E. Hall *Not Yet Identified: the knowledge, skills, and training needs of early years professionals in relation to children's speech and language development.*, *Early Years*, (2003), 23 (2), 117-130.
- [22] NICHD Early Child Care Research Network *Child outcomes when child care center classes meet recommended standards for quality*, *American Journal of Public Health*, (1999), 89 (7), 1072-1077.
- [23] NICHD Early Child Care Research Network. *Child-care structure-process-outcome: Direct and indirect effects of child-care quality on young children's development*, *Psychological Science*, (2002), 13 (3), 199-206.
- [24] D.J. Norris *Quality of care offered by providers with differential patterns of workshop participation*, *Child & Youth Care Forum*, (2001), 30 (2), 111-121.

- [25] S. Sheridan, C. Edwards, C. Marvin and L. Knoche *Professional Development in Early Childhood Programs: Process Issues and Research Needs*, *Early Education & Development*, (2009), 20(3), 377-401.
- [26] E. Weitzman and J. Greenberg *Learning Language and Loving It: A Guide to Promoting Childrens Social, Language and Literacy Development*. Toronto, Canada: Hanen Centre. (2002)
- [27] K. Tout, M. Zaslow and D. Berry *Quality and qualifications: Links between professional development and quality in early care and education settings.*, In M. Zaslow & I. Martinez-Beck (Eds.), *Critical issues in early childhood professional development* , (2006), (pp. 77-110). Baltimore: Brookes.