Stabilizing Developmental Language Trajectories in Infants/Toddlers:

A Preliminary Study

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ABSTRACT

Parents' interactions with their children can have influential effects on children's language outcomes. Special supports may be needed however, when young children live in poverty and show developmental delays early in life. This study analyzed data for a subset of children enrolled in Early Head Start programs and participating in a randomized trial of the Getting Ready intervention (Sheridan, Marvin, Knoche, & Edwards, 2008). These 41 children had standard scores below 85 on the Bayley Scales of Infant Development-II when the EHS and intervention services began. During each home visit or socialization with families, the early childhood educators in the treatment condition were to use a set of strategies collectively defining the Getting Ready intervention (Sheridan et al., 2008). Educators encouraged parent engagement in planned and routine activities with their children and guided parents to interact with their children in supportive learning opportunities at home during daily activities. Statistically significant benefits were observed for the 28 children in the treatment group compared to the 13 children in a comparison group on children's scores on the Preschool Language Scale-4. These preliminary findings suggest that the Getting Ready intervention may provide added value to Early Head Start programs and stabilize children's developmental trajectory for language skills for children experiencing the dual challenges of poverty and developmental delays early in life. Limitations of the study and suggestions for further research are included. (Contains 1 Figure and 2 Tables)

KEY WORDS: language, parent-child interactions, infants/toddlers

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All children live in home environments that provide the milieu for their language learning. There is great variety, however, in the degree of "development-instigating" experiences provided by their parents (Dunst et al., 2001). Special supports may be necessary when parenting is challenged by effects of poverty and children who show early signs of developmental delay.

Economic hardship, for example, has been associated with poor developmental outcomes for young children (Bradley, Corwyn, Burchinal, McAdoo, & Coll, 2001). Poverty increases the risk factors to which infants and young children are exposed, some of which include low birth weight, malnutrition (prenatal and postnatal), disease, restricted access to health care, inhibited neural connections in early brain development, parental depression, harsh parenting practices, limited exposure to language, unsafe physical environments, and less stimulating home learning environments (Brooks-Gunn & Duncan, 1997). Financial constraints often limit families' access to high quality early childhood experiences, such as excellent childcare, visits to zoos or museums, or even transportation within the community to free experiences such as parks or libraries (Park, 2008). The accumulation, as well as the interaction of risk factors can exacerbate the negative influences of these factors on language development for children living in poverty (Sameroff, 2010).

Children raised in poverty often exhibit impaired/delayed cognitive and/or language skills, when compared to peers from middle- and upper-socioeconomic groups, and these effects are noticeable early in children's lives (Brooks-Gunn & Duncan, 1997; Hart & Risley, 1995). The seminal Abecedarian Project researched the effects of early interventions for groups of young children living in poverty and found that "developmental delay, on average, was first detected in the control group in the second year of life and persisted throughout the preschool years" (Ramey et al., 2000, p. 5).

Findings from the Early Head Start (EHS) Research and Evaluation Project (ACF, 2002) revealed 27% of the 1500+ children enrolled in EHS nationally between 1996 and 2001 exited the program with cognitive scores one standard deviation below the national mean with 18% scoring two standard deviations below; 26% of the children had receptive language delays.

Hart and Risley (1995) reported that vocabulary use at age three was strongly correlated with family socio-economic status. They also attributed differences in children's language skills at age three to differences observed in parents' frequency of talk with their children, rate of responses to children's initiations per hour, and the richness of nouns, verbs, and modifiers in parents' speech with children. Furthermore, the authors reported a powerful dampening effect on development when interactions with children began with imperatives or prohibitions such as "Don't," "Stop," and "Quit" (p. 147), a practice commonly found in their "welfare" families. Children in families where these negative patterns of linguistic interaction prevailed had slower vocabulary growth and diminished accomplishments at age three than children whose families tended to interact positively with them.

Poverty and Developmental Delays

The effects of poverty are magnified when low-income families have children whose developmental skills lag behind their typical peers early in life. Bradley et al. (1989) reported that when a child's "early developmental status *and* early home environment were both very low, the likelihood of poor developmental outcomes was markedly increased compared with cases when only one was low" (p. 217). The transactional nature of the effects of poverty and developmental delay can result in a "double disadvantage" and set the child up for halted or declining trajectories in development.

For children living in poverty, the impact of environmental deprivation on development can become pronounced with time. There are a number of longitudinal studies of low-income children providing compelling evidence that normal developmental scores in the first two years of life can decline significantly throughout children's preschool years, in the absence of early interventions (Burchinal, Campbell, Bryant, Wasik, & Ramey, 1997; Luster & McAdoo, 1996; Ramey & Campbell, 1991). Infants and toddlers are in an age group however, which has, historically, challenged those who sought to find reliable predictors of children's future abilities. Early development is not a predictable nor linear process and children's skills are not gained in an even or incremental fashion. When children are tested and retested with standardized instruments their scores are often unstable. This may be due to a variety of influences including cultural, temperamental, or health-related factors as well as universal qualities characteristic of young children, such

as having limited attention spans, feeling anxious with unfamiliar adults, not feeling compelled to follow adult directions, and wide variability in day-to-day performance. Most instruments used to assess the development of young children may be best described as representing children's "behavior and responses for a given day or time" (Fugate, 1998, p. 95). Brooks-Gunn and Lewis (1983) reported that in normal samples of children, adequate predictive validity for tests of intellectual ability occur when subjects are over two years of age, while prediction increases when children were five years of age.

For children with developmental delays however, cognitive instruments in particular, demonstrate a higher level of predictive value (Brooks-Gunn & Lewis, 1983; Holden, 1972). Sattler (1988) found that the correlations of infant test scores to intelligence test scores obtained in later childhood tended to be low for typically developing children; but for infants with developmental delays "correlations are much higher between infant test scores and later childhood IQs, ranging in some studies from .50 to .97" (p. 71). Given the arguments that children who begin with low scores on standardized instruments tend to continue to have low scores, and that the scores of some children living in poverty can decline from infancy through the preschool years, very young children evidencing delays and participating in programs serving low-income families appear to be particularly at-risk for on-going developmental challenges.

Language development, in particular, may be vulnerable to the effects of this double disadvantage as children may experience both fewer learning opportunities when living in poverty than their peers in higher socio-economic strata, and possibly fewer contingent, elaborative responses from stressed adults who may ignore or view the child as "less ready" for more advanced interactions than are their typically developing peers. Whereas, toddlers with slow expressive language development often show considerable abilities to "catch up" with peers by school-age, those from low SES families have a greater likelihood of showing persistent delays in communication skills (Olswang, Rodriguez & Timler, 1998; Paul, 1996; Rescorla, 2013). Maintaining growth in language skills in young children with these risk factors may be a key to children's later school success, since language competencies are so foundational to school-readiness and academic success (Kaiser, Roberts, & McLeod, 2011).

Positive Impact of Early Intervention

Effective early intervention has been shown to hold promise for changing the developmental trajectories of and preventing future complications for young children at risk for or demonstrating developmental delays/disabilities whether due to biological or environmental problems or both (Guralnick, 2005; Raikes, Green, et al., 2006; Ramey et al., 2000). Results of the nation-wide EHS Research and Evaluation Project Study (ACF, 2002) described some children exiting EHS programs with developmental delays, suggesting a need for more intensive support to maintain or improve their developmental trajectories. On average, however, EHS graduates were less likely to show cognitive and language delays than control groups of children who received no early intervention. In addition, EHS families of children with developmental delays sought out and enrolled in IDEA Part C programs at higher rates than families of children with delays in the control group. Jeon et al. (2011) found that enrollment in both EHS and Part C early intervention services before age three resulted in children with delays matching non-delayed EHS populations on measures of pre-academic skills at kindergarten entry and surpassing EHS peers with delays who did not receive the additional early intervention through Part C programs. Finally, Raikes, Green, et al. (2006) found that the focus of home visits in EHS programs could positively influence children's development. Specifically, improvements in children's scores on the Peabody Picture Vocabulary Test were robustly related to the percent of time parents and visitors spent in child-focused activities during the home visits.

The *Getting Ready* Intervention

One approach which has shown some promise for encouraging parents of low income to engage their children in interactions that are warm and sensitive, promote children's emerging autonomy, and are supportive of children's early learning is the *Getting Ready* intervention (Sheridan, Marvin, Knoche & Edwards, 2008). This integrated, ecological, strengths-based approach to school readiness was designed for families with children from birth to age five who are participating in early education and intervention programs in which a primary early childhood professional (ECP) has regular contacts with the family (Knoche et al., 2012; Sheridan et al., 2008). The strategies are designed to be used within existing community programs, by emphasizing the *parent-child* and the *parent-professional* relationships which are

key contexts for supporting the development of all young children, particularly those with, or at-risk for, developmental delays in language and other areas.

The *Getting Ready* intervention melds two evidence-based approaches by delivering early childhood collaborative (conjoint) consultation (Sheridan & Kratochwill, 2008) through effectively implemented strategies to promote parent-child interactions (McCollum & Yates, 1994). The *Getting Ready* intervention encourages a collaborative partnership, whereby the expertise of parents is joined with the ECP's knowledge and skills to identify and address mutually-relevant goals for promoting children's development and enhancing parent-child interactions in routine and planned child-focused activities/interactions (Knoche et al., 2012). A core value of the approach is that the process remains sensitive to cultural and family priorities. The *Getting Ready* strategies can help facilitate high-quality parent-child interactions as the ECP establishes a context for parent-child interactions, affirms the competence of the parent, focuses attention on the parent and child behaviors, provides developmental information, and suggests and models strategies for a parent.

To date, preschool-aged children (three- to five-year-olds) enrolled in Head Start programs where the *Getting Ready* intervention was used have demonstrated improved language use and early reading and writing skills (Sheridan, Knoche, Kupzyk, Edwards, & Marvin, 2011), reduced activity level (Sheridan et al., 2014), and enhanced social-emotional skills (Sheridan, Knoche, Edwards, Bovaird, & Kupzyk, 2010), compared to Head Start children in a "business as usual" comparison group. When parents or ECPs indicated any concerns about the children's development, the effects of the intervention were greater than for peers whose parents or ECPs did not state concerns. The children with delays of 1.5 standard deviations below the mean at baseline on assessments of cognition, language, and/or social-emotional competence showed the greatest gains, in all three developmental domains, from the *Getting Ready* intervention.

For families of infants and toddlers who received the *Getting Ready* intervention as a complement to their EHS services, there were reports of improved parental warmth and sensitivity, increased support for children's autonomy, improved appropriateness for supporting children's learning, and increased appropriateness of parental guidance and directives (Knoche et al., 2012). Further evaluation of these data indicated a positive correlation between children's cognitive scores and parent-child interactions ratings;

children's lower cognitive scores were associated with parental ratings of less warmth and sensitivity, poorer quality of and less appropriate support for their children's learning, and less use of constructive behaviors (Marvin, 2012). Causal relationships between the *Getting Ready* intervention and specific child outcomes however have not been examined explicitly for children who demonstrated developmental delays at the start of the study.

The present study therefore explored the value-added effects of the *Getting Ready* intervention for a subset of participants from the larger longitudinal investigation, completed between 2006 and 2010. In this paper, we present a preliminary look at the effects of the *Getting Ready* intervention for infants and toddlers enrolled in an EHS program, who had standard cognitive scores at or more than one standard deviation below the mean ($\leq$85) on the *Bayley Scales of Infant Development- II* (*BSID-II*) when entering the program and the study began. Comparisons are made regarding children's language development skills, using data from similar participants in a comparison condition, whose EHS experience represented standard, "business as usual" practices.

Methods

Setting and Context

Families involved in the larger study of the Getting Ready intervention (Knoche et al., 2012) were beginning a home-based program offered through EHS agencies in a midwestern state. These programs employed early childhood professionals (ECPs) at three sites. Caseloads averaged 10 families per ECP. The ECPs scheduled families for 60-minute home visits weekly, and monthly family group activities (socializations) held at the local community agency. Home visits typically focused on child development and parenting skills using published curricula (i.e., Beautiful Beginnings [Raikes & Whitmer, 2006], Parents as Teachers [Parents as Teachers National Center, 2008]). This model of EHS service delivery is in line with EHS program guidelines, and was characteristic of both treatment and comparison conditions. Frequency of home visits did not differ significantly between the two groups (Knoche et al., 2012).

Recruitment and Assignment to Treatment Conditions

For the larger *Getting Ready* research project, agency administrators at participating sites were contacted by research staff and informed of the *Getting Ready* intervention. Agency worksites were randomly assigned to treatment or comparison conditions, with professionals in the same worksites assigned to the same condition. With consent of the agency administration, ECPs were contacted, informed of the project, and asked to participate; 66 ECPs agreed to participate. Subsequently, all families assigned to these ECPs, and still eligible for 24 months of EHS program services, were recruited for participation. Informed consent was obtained from 242 English- and Spanish-speaking families, following Institutional Review Board procedures of the sponsoring university. The families' assignment to treatment or comparison conditions matched their agency-assigned ECP, resulting in a nested design. For more information about the design of the larger study, see Knoche et al. (2012).

Participants

The current study aimed to analyze existing data for a subset of participants, previously assigned to the treatment or comparison conditions. The 41 children (17 %) identified as scoring at or more than one standard deviation below the mean ($\leq$85) on the *BSID-II* included 28 children assigned to the treatment condition and 13 to the comparison condition. The 41 children ranged in age from 2 to 27 months at Time 1 assessments (M = 14.6 months, SD = 6.9 months); 66% were boys and 34% girls. Mean scores for the *BSID-II* for the treatment and comparison groups were 77.2 and 73.6 respectively. There were no significant differences between treatment and comparison groups for child age, gender, or *BSID-II* scores before the intervention began.

The adult guardians for the 41 children included mostly mothers (90%) and a few fathers (7%) and grandparents (3%). The families identified themselves primarily as White/Non-Hispanic (74%); 15% were Hispanic/Latino, 3% were Black, and 8% "other." Although 18% of the guardians did not complete high school, 36% reported earning a high school diploma or GED, 41% had some training beyond high school, and 5% reported having at least a two-year college degree. English was the primary language in the homes of 73% of the families; 10% reported speaking Spanish while another 10% spoke other languages; 7% did not report a primary language at home. A majority of guardians were not currently married although 60%

reported being with a partner; 25% had never married. There were no statistically significant differences in demographic composition of guardians in treatment and comparison groups and the demographic makeup of this subset of participants reflected that of the larger sample.

Finally, 22 ECPs provided the EHS services to these 41 families (n = 14 in treatment and n = 8 in comparison samples), with some serving more than one family in this study. All ECPs were female; 5% were Spanish-speaking. Their average age was 36 years. The ECPs had an average of 4.1 years of experience working in early childhood home visiting services and 3.1 years in their current employment. Most (55%) had education of at least two years of college. Demographic qualities were not significantly different between ECPs assigned to treatment and comparison groups.

Experimental Condition

Treatment condition. For the larger study, ECPs in the treatment group were instructed to provide services for parents and children through a prevention lens that augmented the traditional EHS services. During each home visit or socialization with families, the ECPs were to use a set of strategies collectively defining the *Getting Ready* intervention (Sheridan et al., 2008) (see Table 1). The ECPs promoted parent engagement in planned and routine activities with their children and guided parents to interact with their children in *supportive* learning opportunities at home during daily activities.

ECPs assigned to the treatment condition received workshop training on the *Getting Ready* strategies before beginning the interventions, and group and individual coaching twice monthly to support their efforts over the 16-month project (Brown, Knoche, Edwards, & Sheridan, 2009). Observational data collected during home visits indicated that the *Getting Ready* strategies were being implemented with fidelity by ECPs over time (Knoche, Sheridan, Edwards, & Osborn, 2010).

<Insert Table 1 here>

Comparison condition. ECPs assigned to the comparison condition provided EHS services as usual and received direct supervision monthly from agency-provided personnel. Agency-sponsored meetings and inservices included topics for adhering to the Head Start Performance Standards, managing stress, and using positive behavior supports. No support was provided to these ECPs from the *Getting Ready* staff or coaches.

Data Collection

Trained, reliable data collectors scheduled individual child assessments every four months at convenient locations, including the families' homes or the EHS centers over a 16-month intervention period for all the children in the larger study. Direct child assessment data was collected at every other assessment session (approximately every eight months for a total of three sessions over the 16-month period). Baseline or Time 1 (T1) data were collected at the point at which the families first enrolled in the EHS program and began participation in the larger study. Spanish-speaking families were interviewed and observed by bilingual English/Spanish-speaking data collectors. After each assessment session, families received a gift card to a local retailer.

Measures

Assessments for the larger study included measures of parental stress, depression, parent-child relationships, and parenting behaviors as well as child measures of school-readiness skills, social-emotional, cognitive and language development. For the purposes of the current study and subset of participants, only data from two measures were analyzed.

***Bayley Scales of Infant Development*- Second Edition** (*BSID-II*; Bayley 1993). All the children participating in the larger *Getting Ready* project were assessed using the *BSID-II.* The *BSID-II* is a direct child assessment of object constancy, memory, problem solving, learning, verbal ability, generalization, perceptual acuity and discrimination, and classification skills. The average score is 100 and standard deviation is 15. The *BSID-II* is a well-established measure that enjoys strong concurrent validity with other developmental instruments. It is reportedly psychometrically sound, including moderate to high internal consistency reliability coefficients for its Mental Development Index (MDI), (an average of .88, and a range from .78 to .93), and test-retest reliability coefficients "within an acceptable range" (Fugate, 1998, p. 95).

***Preschool Language Scale*- Fourth Edition (*PLS-4*; Zimmerman, Steiner, & Pond, 2002).** The *PLS-4*, a standardized test for identifying language disorder or delay in children under seven years of age, was also individually administered to the children during the assessment sessions described above. The *PLS-4* taps a variety of language constructs including vocabulary, concepts, structure, play, nonverbal

communication, and attention. The two core language subscales, Auditory Comprehension (how well children understand language) and Expressive Communication (how well children use language to communicate with others) were both administered, yielding a Total Language Score with $M = 100$ and $SD = 15$. Test-retest reliability coefficients of the subscale scores ranged from .82 to .95, while those for the Total Language scores ranged from .90 to .97.

Design and Analysis

The impact of the *Getting Ready* strategies on children's cognitive and language skills was analyzed using multilevel modeling (*MLM;* Raudenbush & Bryk, 2002; Snijders & Bosker, 1999). This was accomplished by using *SAS PROC GLIMMIX* which implements a general linear mixed model. A two-level complex sampling design was used, with three repeated observations (level 1) nested within each child (level 2). Since random assignment to experimental condition occurred at the worksite and ECP level, this was a cluster randomized trial with repeated measurements. Parameter estimates were obtained through restricted maximum likelihood (REML) estimation and the between/within degrees of freedom method was used for tests of significance. Child outcomes were predicted by (a) experimental condition, (b) time, and (c) the experimental condition by time interaction. Tests of significance were two-tailed with alpha = .05; effect sizes were also computed.

The MLM accounted for individual differences in initial levels and change. A variance-covariance matrix was used for the person-level random effects, so the models included a random intercept variance, and a random slope variance for time. The random intercept captured the variability in outcomes across individuals at randomization, and the random slope the variability in the individual rate of change (variability in slopes). A within-persons residual variance captures the within-person error variability at each measurement collection point and was assumed to be equal across measurement occasions.

Handling of missing data. Missing data due to attrition were accounted for by the use of Full Information Maximum Likelihood (FIML; Enders & Bandalos, 2001). FIML assumes data is at least missing at random (MAR). Data from all participants with at least one measurement session were retained for the data analysis.

Effect-size computation. Clustering was accounted for in the use of this linear mixed model framework. Therefore, effect size was calculated as the ratio of the group difference in linear change (γ) to the standard deviation of the slope values (Raudenbush & Liu, 2001). Effect sizes over .5 were considered medium but notable and indicative of practical benefit, while effect sizes greater than .8 were considered large and encouraging (Cohen, 1988).

Results

Preliminary Analysis

To investigate if the treatment and comparison groups were different at the start of this current study, descriptive statistics for the key study variables were computed. There were no significant differences at T1 between treatment and comparison groups for language skills as measured with the *PLS-4* ($t(33) = 1.25$, $p = 0.22$). Furthermore, there were no significant differences in mean T1 scores on the *BSID-II* between treatment and comparison participants ($t(39) = -1.06$, $p = 0.29$). This indicates the equivalency of the groups at the onset of intervention activities on these child indicators.

Language and Cognitive Development

Mean standard scores on the *PLS-4* at T1 were 89 and 95 for treatment and comparison groups respectively, suggesting skills within one standard deviation from the mean for children of the same age. At the end of the intervention (T3), children in the treatment group had a mean score of 90 compared to the comparison group's 67 on the *PLS-4*. These analyses of children's language skills suggest that the *Getting Ready* intervention provided added benefits for young children with developmental delays during their 16-month enrollment in the EHS program, above and beyond that which is available through business-as-usual EHS programming. The children with developmental delays in the treatment group showed growth that maintained their language skills within the normal range throughout their involvement in the *Getting Ready* intervention, while children in the comparison group experienced significant declines in standard scores for the same time period ($t = -3.17(28)$, $p = .0037$) and effect size ($d = 2.1$).

Alternatively, a significant difference was not identified for children's cognitive scores as measured over time between treatment and comparison participants. *BSID-II* scores increased slightly for both groups

but were essentially unchanged over the 16-month window. T1 mean scores of 77 and 73 on the *BSID-II* shifted to exit mean scores of 80 and 78 at T3 for the treatment and comparison groups respectively, suggesting that cognitive skills remained delayed for both groups. Figure 1 provides graphic representations of the data for the *BSID-II* and *PLS-4* over time, and highlights the significant negative change in slope for the comparison group on the *PLS-4.* Table 2 provides a summary of the data for these growth curve analyses along with reported *p* values for slope change.

<Insert Figure 1 here>

<Insert Table 2 here>

Discussion

The purpose of this study was to explore the value-added effects for infants or toddlers evidencing developmental delays when the *Getting Ready* intervention supplemented existing efforts in Early Head Start programs. It was hypothesized that children with delays enrolled in the *Getting Ready* intervention would show important improvement in their language development as a result of the parent-professional partnerships and focus on quality parent-child interactions. Children in the treatment group did in fact show significant differences in language development when compared to children in the comparison group over the 16 months of the study. Statistical analyses are supported with visual inspection of plotted estimated mean ratings that offer an alternative way of reflecting on performance in the treatment and comparison groups.

The stable standard scores for language skills over time, for children in the treatment group, suggest a possible link between what parents were encouraged to do when interacting with their children and children's continued growth in language development. It was encouraging to see this group avoid a decline in their trajectory of development often predicted for children living in poverty and evidenced by the children in the comparison group in this study.

The EHS Research and Evaluation (EHSRE) Longitudinal Follow-up Study (ACF, 2002) reported that the children identified with developmental delays prior to age three who received IDEA Part C services while in EHS scored better at kindergarten entrance than children with suspected developmental delays who

did not receive Part C services. We know the identification of children with language delays increases notably after age three nationally (Blackorby et al., 2010) and is the most common reason for children in Head Start programs to be eligible for IDEA Part B services (Tarullo, Aiken, Molduddin, & West, 2010). An early intervention program for infants and toddlers that can improve or maintain growth rates may result in fewer children needing speech-language services after age three or reduce the intensity and duration of those services. The *Getting Ready* intervention, in partnership with EHS, may effectively provide that desired outcome and assurance for the children who, in the first three years of life, may already show developmental delays.

The lack of significant change in *BSID-II* scores for children in both groups, over the duration of 16-months, is not surprising in the present study and may reflect what Sattler (1988) predicted for young children with developmental delays early in life. Furthermore, these unchanged scores for both the treatment and comparison groups may reflect the benefits of continued enrollment in the EHS programs, since children living in poverty without early intervention are anticipated to show declining scores over time (Burchinal et al., 1997).

The decline in standardized scores on the *PLS-4* for children in the comparison group however, despite unchanged *BSID-II* scores, suggests that these children may have lacked the same opportunities or models for necessary language growth observed in the treatment group. The quality of interactions children have with familiar adults in the early years of communication development are critical to formation of cultural/linguistic rules needed for generative language (Vernon-Feagans et al., 2013). The children in the treatment group, in contrast, showed stable language development over this time period.. No part of the *Getting Ready* intervention however, was targeted on vocabulary lessons or direct instruction in language understanding or use. Children in both groups should have benefitted from the developmental curricula used by EHS providers to help families support their children's language learning. The extra emphasis on the quality of parent-child interactions in the *Getting Ready* intervention may have activated the existing curriculum's focus and made a difference in the language-learning opportunities available for children in the treatment group beyond what the language items on the *BSID-II* can discern. Authors of the *BSID-II* suggest

that particulars regarding any delay noted on the language subscales are best explored with completion of the *PLS* (now *PLS-5*). Furthermore, the authors acknowledge that a composite score can mask delays if one area is strong and the other weak (Pearson Assessment Support, 2008). The families' experiences in EHS may have been sufficient to prevent further decline of below-average cognitive abilities as measured by the *BSID-II*, but the *Getting Ready* intervention provided value-added supports specific to maintaining children's language development within an average range, as measured by *PLS-4*.

Quality interactions with parents can provide children opportunities to hear vocabulary, engage in exchanges to practice new words, and have initial attempts at linguistic communication shaped by the contingent responses of attentive adult partners (Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002). The parents receiving the *Getting Ready* intervention in the current study were encouraged to adjust the quality of their interactions with their children, to be more responsive to them, and encourage their autonomy. These targeted adjustments may have been sufficient to account for the children's language development. In contrast, children in the comparison group demonstrated a declining developmental trajectory for language skills. The results over time for the comparison group were not compared however to a control group not enrolled in EHS services, so the degree of benefit from the EHS program alone on children's language skills cannot be determined and results compared with findings from the national EHS study (ACF, 2002). The visual inspection of the data only suggests that the *Getting Ready* intervention may have provided "added value" for the children in the treatment group.

These preliminary findings complement those reported for preschool-age children's language skills as a result of enrollment in *Getting Ready* intervention (Sheridan, Knoche, et al., 2011), and confirm the moderating effect of developmental delays. The *Getting Ready* intervention may provide added benefit to early intervention programs to reverse or stabilize the trajectory for language development in children with cognitive developmental delays. Since language competencies are foundational for other school-readiness skills, maintaining growth in language development for young children with risk factors associated with poverty and developmental delay may be key to later school success.

Since this current study did not report parent-child interaction behaviors for parents of children with developmental delays, further study of this population is warranted to tease out the relationships among parent-engagement behaviors, particularly parental use of directives, other salient features of the *Getting Ready* intervention, and the language development of this vulnerable group of children. Furthermore, data regarding the frequency of home visits for this subset of 41 families and the fidelity of the ECPs' use of the intervention strategies were not analyzed and could contribute to the findings, despite reports of no significant difference in visit frequency or strategy use in the larger study sample (Knoche et al., 2012).

When children have developmental delays, the adage regarding "quality programs are necessary but not sufficient" may be supported with the results of the current study, but further research is needed. The 28 children with developmental delays made significant changes in language skills over a 16-month period when ECPs working in the EHS programs included *Getting Ready* strategies during interactions with their parents. The small sample size in the present study however limits generalization to a larger sample population. Finally, the use of similar coaching models focused on parent-professional partnerships to effect such changes in parents and children warrants further investigation.

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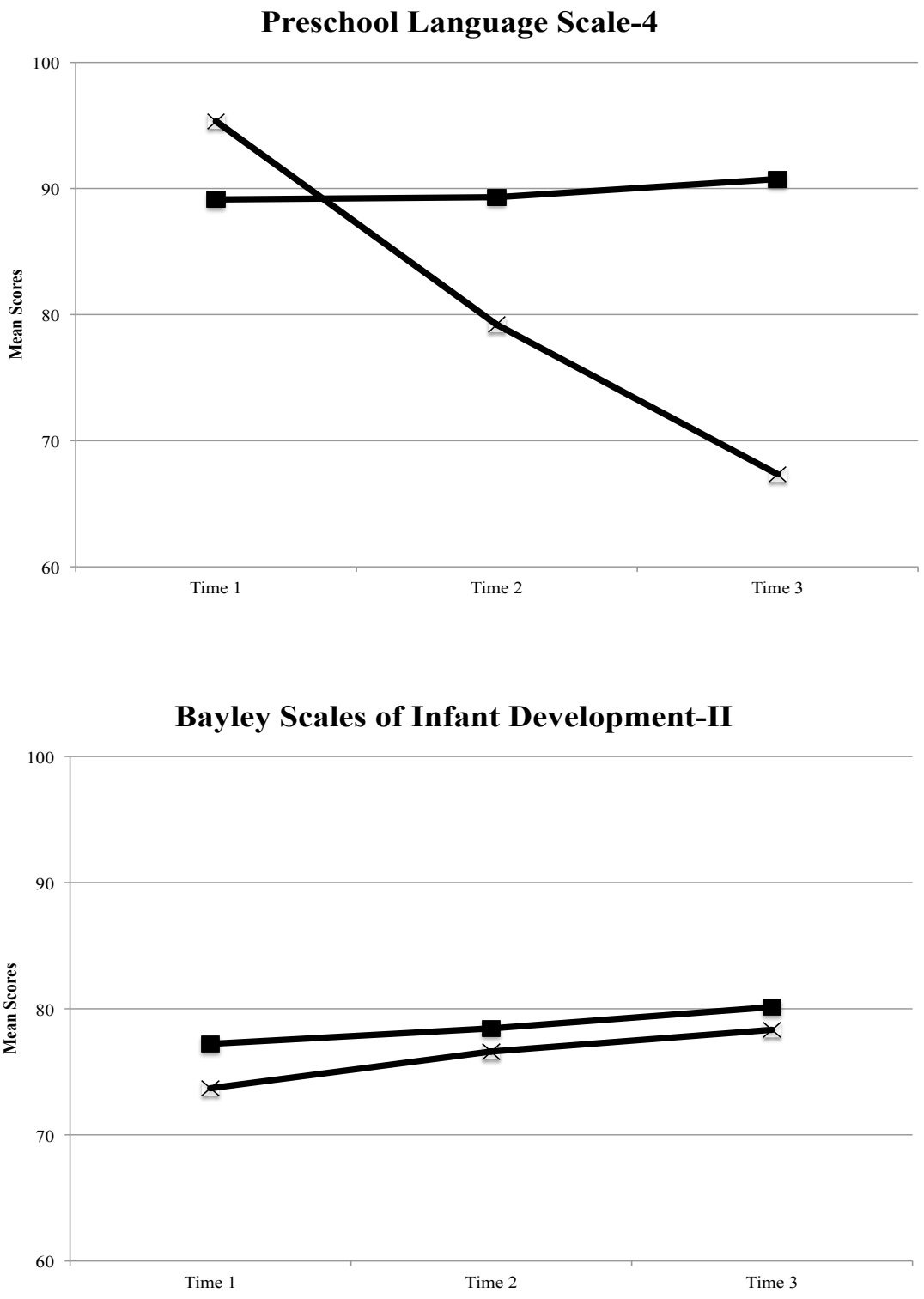

Note: X Comparison

■ Treatment

Figure 1. Treatment condition X time interaction for *BSID-II* and *Preschool Language Scale-4*

Table 1

Getting Ready Strategies and Definitions

Strategy	Definition
(Re-)Establish relationship with parent	*Convey support, caring, or interest in family activities and well-being; "small talk."*
Elicit parent observations and ideas	*Invite parents' input regarding child's development, likes/dislikes*
Affirm parents' competence	*Warmly acknowledge developmentally supportive interactions with child*
Establish dyadic context	*Intentionally and actively arrange/rearrange environment to increase probability of parent-child interaction*
Discuss and prioritize concerns	*Select concerns or desired outcomes to focus on*
Focus parent's attention on child strengths	*Comment to draw parent's attention to particular child competencies or actions*
Provide developmental information	*Label or interpret child's abilities within context of play and interaction; provide parent with education around developmental milestones*
Brainstorm	*Invite parent input on strategies and learning opportunities that fit into home and daily routine*
Make suggestions/ Provide directives	*Explicit statements about what parent can do to support child's development*
Model and promote practice/interactions	*Enhance parent's repertoire of appropriate strategies for interacting with child; parent responds by trying out the modeled behavior*
Help plan for future interactions and goals	*Discuss strategies that will be used at home and/or in classroom to support child's development*

abbreviated from Knoche, Sheridan, Edwards, & Osborn (2010

Table 2

Descriptive Statistics for Child Behaviors Over Time and Growth Curve Model Fixed Effects

Variables	Time 1	Time 2	Time 3	Slope (T-C)	Significance	Effect Size
	Mean (*SD*)	Mean (*SD*)	Mean (*SD*)	Estimate	*p*	*d*
BSID-II						
---Treatment	77.21 *(8.88)*	78.44 *(14.17)*	80.13 *(8.24)*	-0.1314	0.9423	2.1
---Comparison	73.69 *(11.77)*	76.6 *(17.66)*	78.33 *(7.09)*			
PLS-4						
---Treatment	89.13 *(12.07)*	89.31 *(15.24)*	90.75 *(10.29)*	-7.3496	0.0037*	2.1
---Comparison	95.33 *(17.06)*	79.20 *(10.66)*	67.33 *(16.17)*			

*$p < .05$