Efficacy of modified parent training to facilitate expressive language of children with an expressive language delay

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EFFICACY OF MODIFIED PARENT TRAINING TO FACILITATE EXPRESSIVE LANGUAGE OF CHILDREN WITH AN EXPRESSIVE LANGUAGE DELAY

A Thesis

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Marie Henderson
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Abstract

This study aimed to study the efficacy of a modified parent-training program on parents’ use of language facilitative techniques. The training method employed a handout and discussion of the facilitative techniques and how they could be incorporated into play time with the children. Participants included 4 parent-child dyads recruited from a school for children with language delays. Effectiveness of the training was determined by taking data on parent and child behaviors from tape recordings of parent-child play interactions that occurred in each family’s home. Results showed that parents were able to use the procedures during baseline and maintained relatively stable levels of use throughout the study. Teaching of specific target skills (i.e. predetermined target words) did not increase until weekly feedback was provided. Children’s use of the target skills increased as parents’ use increased. Future directions and limitations of the study are discussed.
Introduction

Language is fundamental to communication. Social interactions depend on exchanges of information through a common medium. Language functions as this medium. Humans use language as a means for communicating requests, asking questions, answering questions and expressing needs. Language development begins in early childhood. Both genetic and environmental factors affect language development. People in the immediate environment facilitate speech development (Bruner, 1981). Longitudinal studies using naturalistic observations and detailed recordings have furthered our understanding of normal language development (Bates, 1976; Bloom, 1970; Brown, 1973).

Children begin to communicate their needs through the use of gestures and nonconventional vocalizations before they say their first words around the age of 12 months (Chapman, 1981). Children’s verbal communication most commonly begins with single-word utterances, with an average comprehension of about 50 words at 13 months and an expressive vocabulary of 10 words by 15 months (Benedict, 1979; Riech, 1986). The evolution of single words into two word utterances is the subsequent step of normal language development. Two word utterances usually occur when children have at least 50 or more words in their vocabulary. By age two, spoken vocabulary increases to over 200 words, after which utterances become more elaborated (Brown, 1973; Riech, 1986). Between the ages of 3 and 5, children begin to produce complex sentences. By the time a normally developing child enters first grade, the child has acquired the basic structures of language (Bloom, Rocissano, & Hood, 1976).
Commonalities and differences exist in language development across children. Basic commonalities include: age of language appearance; early sentences and words that encode the same sorts of meanings; and formal grammatical devices learned after basic meaning relations are mastered. Variability exists in the rate of language acquisition and the way in which aspects of language are mastered and combined (Rice, 1989).

By age two it is possible to identify children whose language development is impaired (Paul, 1991). Since most children produce recognizable words and first two word combinations by age 2, children who lack these skills are identified as delayed. Large-scale studies (Coplan, Gleason, Ryan, Burke, & Williams, 1982; Frankenburg & Dodds, 1967) support considering children to be delayed in expressive language development when they fail to produce 50 words and two-word combinations by the time they are 24 months (Paul, 1991). For some children, the lack of productive language serves as an indicator of a linguistic or developmental disability. For others, this delay has no future consequence on language or academic development (Hecht, 1986). Stark, Mellits, and Tallal (1983) reported a study (Allen & Bliss, 1979) estimating that, of all preschool children, 25% have significant speech and language delays. Estimates between 5% and 6% prevalence in school-aged children suggest a misidentification of children with normal potential who are able to catch up by the time they enter first grade (deVilliers & deVilliers, 1978; Dublinske, 1981; Hecht, 1986). Children whose general cognitive, sensory, and emotional abilities are equal to their peers but lag significantly behind in their language development are referred to as being language impaired, being language delayed or having a specific language disability (Rice, 1989).
Hecht (1986) discusses different ways language can be delayed. First, he describes delay of onset as a child beginning to talk relatively late. Although there is little known about late starters, there seems to be little cause for concern when these children rapidly catch up. Delay can also be described as a slower rate of language development. Research suggests that these children experience difficulties with language and learning throughout the school years (Aram, Ekelman, & Nation, 1984; Stark et al., 1983). A third form of delay may exist in the “what” or the “how” of language acquisition. The “what” or product is deviant when a child’s early vocabulary consists mainly of verbs instead of nouns. Product may also be deviant if words and sentences are used for labeling and describing objects, but not for making requests or asking questions. A deviant “how” or process of language acquisition is evident when children talk about past events before talking about present events. It is not known how or why these delays occur or if they persist into the preschool and school-aged years (Hecht, 1986).

Paul (1991) conducted a longitudinal study to investigate the issue of whether these early delays persist or resolve on their own. A group of 30 children between 18 and 36 months whose mothers reported small expressive vocabularies were matched and compared with a group of 30 children with normal language development. Children who produced fewer than 10 intelligible words by 18 to 23 months, or fewer than 50 words or no two-word utterances by 24 to 34 months were considered slow in expressive language development. The study suggests that these children are at substantial risk for long-term delay due to differences in social skills, communicative behavior, phonological maturity, and maladaptive behavior. Paul (1991) reports that follow-up studies conducted by Paul and Smith (1991) on these children show that, at age 4, 57% continue to show expressive
deficits. The delay no longer manifests itself in vocabulary size but exists in sentence structure and complexity, along with deficits in narrative skills.

A model, presented by Scarborough and Dobrich (1990), on the language development of children with slow expressive language development includes an “illusory recovery” period. During this period, children, who appear to catch up to their peers by age 5, may only be moving within the normal range because the rate of growth of their peers has slowed down. They suggest that the children with language delay are again surpassed by age 6 or 7 due to their peers’ language growth speeding up again. Whether or not recovery from early language delay occurs depends on how recovery is defined (Paul, 1991). Normal expressive vocabulary and general fluent production tends to occur by age 5. It is not yet clear whether or not these children have an increased risk for difficulties with sophisticated language use or with school curricula.

The environment seems to contribute to language development or delay. Generally, children must hear language in use and it must be important to the child for children to acquire it optimally (Rice, 1989). Studies suggest that mothers’ verbalization to their young children contributes to their children’s vocabulary and language development (Clarke-Stewart, 1988). An example of how mothers modify their speech pattern to correspond with their younger child’s comprehension levels and interests is “motherese.” Motherese is a form of adult input used by middle-class, western societies (Rice, 1989). Adults and older children use this style of speech to communicate with young children. The main features of motherese consist of an emphasis on the here and now, using restricted vocabulary with paraphrasing; frequent repetitions; simple sentences; and a slow rate of speech (Pye, 1986). Carke-Stewart (1988) suggests that
these features make it easier for all children to learn and understand language. Motherese is culture specific but not necessary to language development. Infants are able to learn language without the use of motherese (Ratner & Pye, 1984). Currently, parents’ speech is viewed as providing children with information about language, by illustrating language regularities. Parental speech also serves as a prod for encouraging children to use and create language (Clarke-Stewart, 1988).

It is difficult to determine how the environment contributes to the differences in rate of language development between children. “Gains” in children’s language over an extended period of time have been used to assess the rate of language development. Specific gains in language include number of utterances, number and percent of WH questions and other kinds of questions, and number of noun phrases per utterance (Clarke-Stewart, 1988). Significant correlations have been found between children’s gain in language and mothers’ verbal prodding, verbal input, and simple expansions of children’s utterances (Barnes, Gutfreund, Satterly, & Wells, 1983; Furrow, Nelson, & Benedict, 1979; Hoff-Ginsberg, 1986).

Semantically contingent speech is a form of facilitative input that has been replicated across studies as an effective interactive style (Rice, 1989). A semantic contingency occurs when an adult immediately matches the topic or content of the child’s utterance. The adult may repeat the child’s utterance, expand it, or use it in a question. Combining linguistic encoding of what is immediately of interest to the child and the child’s own utterances matches language form to communicative intent through joint attention (Rice, 1989). Some input styles may not help facilitate speech. Nelson (1973) found that a directive adult style, consisting mainly of requests, instructions, commands,
and directions, is associated with a slower rate of acquisition of naming words. Rice (1989) noted that these findings should be interpreted cautiously because it is unclear whether the input style led to the delay or the delay influenced parental input style.

Parent Training Literature Review

It is evident from the previous discussions that maternal behavior is an important environmental variable contributing to language development. Many studies have focused on training parents to be language facilitators (Alpert & Kaiser, 1992; Fitzgerald & Karnes, 1987; Gibbard, 1994; Iacono, Chan, & Waring, 1998; Laski, Charlop, & Schreibman, 1988; McDade & Varnedoe, 1987; etc.). The goal of parent training is to change the interactive behavior of the parents (McDade et al., 1987). There are two major approaches available for structuring the focus of adults’ interactions with language learning children. The first approach focuses on teaching adults skills for acquiring and maintaining a child’s attention toward specific items and activities that are selected by the parent. The second approach trains parents to attend to items that interest the child in child-directed activities (McDade et al., 1987). In either approach, joint reference by both parent and child must be established to facilitate optimal learning (Bruner, 1975). Therefore, parents must be taught to generate language interactions from the child. The reciprocal effect of the child’s speech on the mother and the mother’s speech on the child is important (Gibbard, 1994). Mothers of children with language delays may appear to use fewer expansions than mothers of normally developing children, but Paul and Elwood (1991) report that the proportion of expressions relative to the number of child utterances was not different between the groups.
Once the child produces language, the parent is able to use language facilitative techniques to enhance the child’s language (McDade et al., 1987). Parent training has been used to teach parents how to use language facilitative techniques for helping to enhance their child’s language. McDade et al. (1987) mentions three techniques that have been shown to be effective for inducing language growth. These techniques are positive feedback, expansions, and comments. Positive feedback, or acknowledgement, is reported to be correlated with language development (Furrow et al., 1979; Ellis & Wells, 1980; Newport 1977; Snow, Midkiff-Borunda, Small, & Proctor, 1984). Acknowledgment consists of praising the child for the utterance then imitation of the utterance (McDade et al., 1987). Such feedback is beneficial for providing information to the child regarding correctness and communicative effectiveness of their utterances, while supporting the child’s attempt at communication (Cross, 1984; Snow et al., 1984).

Expansion of incomplete and grammatically incorrect utterances has been shown to be effective for facilitating language development. Studies reported that using expansions helps to facilitate grammatical development (Maulof & Dodd, 1972; Nelson, 1977). Also, expanded utterances are more likely to be spontaneously imitated than other forms of adult communication (Folger & Chapman, 1978; Scherer & Olswang, 1984). Comments, also known as models or semantic extensions, regarding previous utterances provide new semantic information for the child (McDade et al., 1987). Expansions and comments have been reported to be the most effective adult interactive behaviors for producing language growth (Barnes et al., 1983; Cross, 1978).

Incidental teaching (Hart & Risley, 1968) is another technique used for facilitating language but focuses on environmental arrangements. Hart et al. (1968)
showed that, when contrasted with traditional group training methods, incidental teaching used in a preschool free play activity resulted in increases in target language. This method has also been found to be effective for facilitating several language categories (Hart & Risley, 1974), language use with peers (Hart & Risley, 1975), and total amount of talking and elaboration of language (Hart & Risley, 1980). In this form of teaching, the environment is restructured to encourage child-initiated teaching episodes. The environment includes items of interest among other naturally occurring stimuli and provides stimuli that are child-selected and contingently available as reinforcers (McGee, Krantz, & McClannahan, 1985). The environment is arranged so that the desirable materials are visible to the child but out of reach. Access to the materials is contingent upon the child producing requests that include their language targets (Alpert et al., 1992). In incidental teaching, prompts for elaborated language vary according to the child’s initiating responses (McGee et al., 1985).

Rogers-Warren and Warren (1980) used a variation of the incidental teaching approach with severely language-delayed preschool children. Instead of child-initiated interactions, teachers were instructed to use mands (instructions to verbalize or non-yes/no questions) and models (imitative prompts) for requesting verbal behavior. This placed the teacher in control of the number of teaching opportunities, while the reinforcer was still determined by the child. Results from this study showed increased child verbalization rates, increased responsiveness to obligatory speech situations and generalization from the training situation to the classroom. Thus, incidental teaching is an effective language facilitation procedure that is effective when used in conjunction with the other language facilitative techniques (Rogers-Warren et al., 1980).
Time delay is another procedure that has been used in an incidental or naturalistic manner. Halle, Marshall, and Spradlin (1979) restructured the environment and used time delay to maintain food tray requests. Receiving the food on the tray served as a natural consequence for the verbal behavior. Halle, Baer, and Spradlin (1981) furthered their previous results by showing that the delay is quick to teach and easy to implement, provides opportunities for children to initiate, is generalizable to novel situations, and can be maintained over time by teachers.

Single subject and group experiments have been conducted to investigate the effectiveness of various parent-training procedures. Gibbard (1994) looked at the effectiveness of a parental-based group therapy intervention by comparing the expressive language skills of an experimental group and a matched control. The children were between the ages of 2 and 3 years and had an expressive vocabulary of 30 or fewer words. Parents in the experimental group were involved in a total of 11 group-training sessions over a 6-month period. Each training session consisted of objectives for identifying target verbs and nouns to be taught, developing simple two-word utterances to be taught, and role-playing between the therapist and parent to demonstrate a detailed structured teaching situation where imitation encouragement and role-reversal techniques were used. Significant differences were found between the post-therapy scores of the two groups for gains in expressive language. Gibbard (1994) conducted a second experiment to determine effectiveness of the intervention compared to the effectiveness of direct speech and language therapy between therapist and child. Also, a third group was added to control for some non-specific intervention factor possibly influencing the results. The third group received indirect parental-based group treatment using non-specific cognitive
tasks for objectives. Results showed that language gains were similar between the parental language group and direct individual therapy group while the parental language group consistently had significantly greater language gains than the parental control group. This finding suggests that it was the specific language objectives and tasks of the parental language group rather than some extraneous intervention factor that was effective for promoting language gains (Gibbard, 1994).

Eiserman, Weber, and McCoun (1995) replicated the strength of a parent-trained intervention using a group design. In this study, parents were trained to use techniques in auditory training, the appropriate sequence for teaching sounds and instruction in correcting articulation problems. Parents received training in their home for 40 minutes twice a month. Parents were instructed to work with their child for 20 to 30 minutes four times weekly. The home parent training was found to be at least as effective as the clinic based therapy group. A cost analysis comparing the costs of clinic based therapy and home based therapy found negligible differences for intervention costs. When parent time was included in the analysis, the total cost of resources used in the home parent training was higher. The majority of participants in this study were Caucasian, two-parent families therefore this study was limited by its sample not being representative of the total population of children who receive speech services (Eiserman et al., 1995).

Although group designs aid in showing overall comparative effectiveness of interventions, they provide no information on individual effectiveness. Specifically, group designs provide no information on the effects of the intervention on individual participants. This information is necessary for evaluating individual gains that are possibly generalizable to other individuals. Group means do not provide this
information. A single subject design may provide information regarding replication of intervention effectiveness. The multiple baseline design across subjects has been used for this purpose.

Use of the Natural Language Teaching Paradigm (NLP) to increase verbal responding has been researched using the multiple baseline across subjects design (Koegel, O’Dell, & Koegel, 1987; Laski et al., 1988). This paradigm is based on the premise that the factors identified as characteristic of the normal language acquisition process could possibly be used in an intervention to facilitate increases in verbal responding of children with language delays. Koegel et al. (1987) compared the use of the analogue teaching condition to the Natural Language Teaching Paradigm to improve verbal language acquisition for nonverbal autistic children. The analogue teaching condition represents the traditional clinician directed language therapy session. Stimulus items varied across the conditions. The natural language teaching condition had stimulus items that were chosen by the child, varied every few trials, and were age-appropriate items that served a functional role in the therapist-child interaction. In contrast, the analogue condition contained stimulus items that were chosen by the therapist, repeated until a criterion was met, and were phonologically easy to produce regardless of their functional role in the environment. This investigation found large benefits from using the Natural Language Paradigm: (1) the participants used more imitative utterances with the NLP than with the Analogue Paradigm, (2) in the NLP only, children showed generalization to spontaneous utterances, and (3) generalization of clinical gains made by the children was only found in the NLP condition.
Laski et al. (1988) trained parents to use the Natural Language Paradigm to increase their autistic children’s speech. Parents were trained to use four key components of the NLP: direct reinforcement of verbal attempt, turn-taking with the stimulus material, task variation and multiple exemplars, and shared control. “Direct reinforcement of verbal attempts” consisted of the parent providing the object or activity and praise to the child as reinforcement for any verbal attempt made by the child. The parent displayed “turn-taking with the stimulus material” by having a turn with the toy and modeling a target response about the toy, the child taking a turn with the toy, then the parent having another turn or modeling another word or phrase. A parent changing stimulus materials and/or words modeled exemplifies “task variation and multiple exemplars.” When the child was given the opportunity to choose a new toy, when the play activity changed following a child’s gesture or verbal request, and when the target word or phrase was allowed to be changed by the child the parent was using “shared control.”

Parents were trained during successive 15-minute sessions, during which they discussed the NLP procedures, observed two sessions of the therapist conducting the NLP procedures with the target child, and received in vivo training. The parents attended a minimum of 5 and a maximum of 9 training sessions until criterion performance on the NLP procedures was achieved. After the second training session parents were instructed to work with their child during 15-minute NLP sessions in the home. Generalization probes occurred in a large playroom, a free play setting in the child’s home, and in the clinic break room. Parent verbalizations, child verbalizations and echolalia were measured during these generalization measures. Posttreatment increases occurred in
parents’ requests for vocalizations in the generalization sessions, while the children appeared to be more verbally responsive after the training. Although there was no treatment integrity reported on the accuracy of the procedures used in the home, these results suggest that parents can be trained to use the NLP procedures to elicit speech from their children.

A similar model of language intervention that encompasses most naturalistic techniques is milieu teaching. This teaching approach, first proposed by Hart and Rogers-Warren (1978), is characterized by attempting to teach by following the child’s attentional lead within the context of normal conversational interchanges, focusing on teaching the form and content of language in a normal use context, and using dispersed training trials (Warren & Bambara, 1989). Incidental teaching (Hart et al., 1980), mand-model (Warren, McQuarter, & Rogers-Warren, 1984), and time delay (Halle, et al., 1979) are the specific techniques used in milieu teaching. Milieu techniques have been shown to have strong effects for frequency of requests (Hart et al., 1968, 1974, 1975, 1980), imitations, and responses to open-ended questions (Warren et al., 1984; Warren et al., 1989). A study of the effects of milieu teaching on enhancing the acquisition of basic syntactic-semantic forms and a broader use of language for pragmatic functions was conducted by Warren et al. (1989). A multiple baseline across subjects design was implemented for three children with developmental delays. Each session was conducted in a partitioned area at the child’s school with a trainer, the target child, and one to two peers. The intervention targets for all three children were action-object combinations. Generalization sessions took place in a play area in the child’s classroom with the child’s teacher. Three to four 15-minute training sessions occurred weekly. Verbatim samples
of the subject’s language were taken for two of the sessions each week with supplemental audio taped recording for all observations. Degree of support and function were the two categories of behavior used for coding of utterances. Degree of support occurred when the adults or other child’s verbalizations had immediately preceded the target child’s utterance. Verbal behavior directed at the child, such as questions, comments, models, or mands, was included in this category. Function referred to how the utterance was used, such as declaratives, imitations, protests, requests for action/objects, and vocatives.

Training sessions consisted of an environment with active control of materials and structured play to provide opportunities for prompting, training of the target form, and to ensure multiple exemplars of the action-object were incorporated into the training sessions. Mand-model and incidental teaching were used to provide specific instruction. In the mand-model technique the teacher is the initiator of instructional interaction. In incidental teaching the child is the initiator. During each training session 8-10 instructional episodes occurred. Results of this study revealed an increase in the frequency and diversity of nonobligatory action-object combinations and an increased responsiveness to target probe questions as the intervention progressed, which suggests that during the course of the intervention the subjects were developing a flexible, generative action-object syntax. These results suggest that milieu intervention approach can be used for facilitating the acquisition of basic generative syntactic/semantic relationships in borderline to moderately mentally retarded children (Warren et al., 1989).

Kaiser, Hemmeter, Ostrosky, Alpert, and Hancock (1995) trained parents to use milieu teaching procedures to teach functional language skills to their preschool aged children with developmental disabilities. The purpose of this study was to replicate
previous research, which showed that parents could learn and apply the milieu techniques (Alpert et al., 1992; Laski et al., 1988), along with examining the relationship between format and length of training and parent use of the techniques at home. They were particularly interested in the effects of short term group training on the parents’ behavior and the effects of that training on their children’s communication. Eight parent-child dyads participated in this study with only five completing all phases. All children had expressive language delays that ranged from 7 months to 22 months. A multiple baseline design across three groups of families was implemented. The three phases consisted of baseline, group training, and intensive training. Language targets for each child were based on the Sequenced Inventory of Communication Development (SICD) (Hedrick, Prather, & Tobin, 1975), the language samples, and consultation with the parents on the language skills they felt were important for the children to learn.

During baseline the parents were instructed to interact with their child in their home as they would in absence of the trainer. In the group training condition there were eight 60–90 minute sessions conducted separately for each of the three groups of families. Environmental arrangement strategies and the four milieu teaching procedures (model, mand-model, time-delay, and incidental teaching) were the two primary components of milieu teaching trained during group sessions. The strategies served the purpose of creating the context and opportunity for teaching language by increasing the chances for the child to initiate about the environment. During the group training phase, the trainer videotaped one 15-minute parent-child interaction session in the home once a week. Immediate feedback and training occurred. Sessions were conducted in the home twice a week in the intensive training phase. Instructions, feedback and coaching were
delivered to the parent before each videotaped parent-child interaction session. The number of sessions in this phase ranged from 7-18. Training continued in this phase until criterion level of performance was achieved. In order to reach criterion each of the four procedures had to be correctly demonstrated at least two times with an overall 80% correct use of Milieu procedures during two consecutive sessions.

Parent use of the milieu procedures was monitored by three measures: frequency of use of the environmental arrangement strategies, frequency of correct milieu teaching episodes, and frequency of target teaching episodes. Results of the study showed increases for all families in the use of the environmental arrangement strategies and modest increases in the frequency of correct use of milieu teaching episodes during group training. However, none of the parents met the specified criterion for any of the milieu teaching procedures during the group-training phase, but their frequency of correct use of milieu strategies did increase modestly. Additional, individualized home training for the parents resulted in parents learning the techniques to criterion levels. Frequency of use of milieu procedures to teach child-specific language targets increased from baseline to group training. These results suggest that the short-term group training may have a positive impact on parents’ strategies for teaching language but more intensive training may be necessary for mastery of the techniques (Kaiser et al., 1995).

Data were collected on child use of targets, total child communication attempts, and child responses to parent teaching attempts to determine the effects of the intervention on the child. Four of the five children increased their prompted use of targets during the group training, while 2 children also increased spontaneous use of targets during this phase. Child responsiveness to parent teaching increased for three
children during the group training. A ceiling effect occurred for the other two children who were already highly responsive during baseline. Although intensive training was necessary for parental mastery of the techniques, positive increases in the child behaviors was observed during the less intensive group training. This may suggest that the modest increases in frequency of correct episodes and increases in target teaching episodes made by the parents during the group-training phase were sufficient for influencing child language behaviors. This suggestion is strengthen by the lack of significant changes in child behaviors during the intensive training phase. It is important to remember that the ultimate goal of training parents to use language facilitative techniques is to promote changes in children’s language use.

Alpert et al. (1992) trained parents to use the milieu procedures to evaluate the acquisition, generalization and maintenance of the procedures. Participants included six preschool aged boys with language delays and their mothers. A multiple baseline design across three pairs of subjects with six phases was used to study the effects. Clinic based training for each milieu technique was divided into four separate conditions. The six consecutive conditions were baseline, model, mand-model, time delay, incidental teaching, and maintenance. Baseline sessions were conducted in the home where the experimenter instructed the mother to play with her child. These sessions were audiotaped. Clinic based training for each technique consisted of a handbook, handout on the target technique and a video, along with home based training following the clinic-based training for each technique. The home based training consisted of the parent practicing the technique in a 15-minute play interaction with the trainer present. Home-based training sessions occurred 2-3 times after each technique was taught. During
theses sessions the mothers were provided with the following information in sequential order: descriptive and graphic feedback regarding the mother’s use of the procedures during the previous visit; audiotaped examples of correct and incorrect use of the procedures; trainer modeling use of the procedures with the child; verbal feedback after the mother practices; mother uses the procedures during a 10-minute taped session; verbal feedback provided on usage during the 10 minute segment; an additional 5 minute taped practice session occurred; and verbal feedback about the 5 minute session. New techniques were not trained until the mother met 4 guidelines: participation in a minimum of six sessions per condition, target procedure used correctly at least 10 times per 15 minute session, target procedure applied correctly at least 75% of the time in two sessions, and maintained accelerated levels of correct use of the previously taught procedure. Television-on and household chore generalization probes were conducted at the end of each condition. During these 15-minute sessions mothers were instructed to use the trained procedures without receiving feedback. At the end of training the importance of maintaining usage of the procedures was discussed along with a handout on maintenance.

Mothers’ behaviors that were recorded included models, mand-models, time delays, positive feedback for verbal or nonverbal behavior, negative feedback for verbal or nonverbal behavior, corrective feedback for verbal behavior, unintelligible responses, no response, and no time for child response. The child behaviors included correct responses, incorrect or unrelated responses, unintelligible responses, no response following models, mands, time delays, and verbal and nonverbal requests/commands. A scoring system was also used for scoring the mother’s milieu teaching procedures as
correct or incorrect. The results indicated that the mothers could be taught to use the milieu procedures during play sessions with their child. Mothers’ use of the procedures was generalized to non-training situations. Acceptable levels of frequency and percentage of correct use were maintained in the monthly follow-up sessions. Use of the procedures was associated with increases in the children’s mean length of utterance, requesting and total number of words and novel words produced, but due to the design of the study conclusions about a functional relationship could not be drawn (Alpert et al., 1992).

Use of Feedback with Parents

The literature on training parents of children with language delays gives limited information about how feedback was presented to the parents and what feedback was presented. Kaiser et al. (1995) mentions that during their group training phase parents were given instructions, feedback, and coaching after home sessions but they do not mention how they decided what to give feedback about. During their intensive training phase, videotapes and graphs were used to provide feedback but there was no mention of what was on the tapes nor what type of graphs were used.

Alpert et al. (1992) provided feedback to parents during bi-weekly home sessions. Before each session, descriptive and graphic feedback about the mother’s use of the techniques during the previous session was provided. Total number of procedures used correctly and the frequency and percentage of correct use to the date was presented graphically. Pre-selected audiotaped examples of correct and incorrect use of the procedures during the previous session were reviewed. Also, following practice of the procedures the trainer provided verbal feedback. The trainer faded use of feedback and
reviewing of tapes as the parent became more proficient in using the procedures. The authors did not define more proficient

Summary

Research on training parents to be language facilitators has produced positive results. Generally, parents have been taught techniques to maximize their language interactions with their children. Techniques such as time delay, modeling, mand, and incidental teaching have consistently been used to help promote, expand, and augment language from children with language delays. Group designs and single subject designs have been used to test the efficacy of these techniques. Although group designs have been beneficial for establishing the effects of parental involvement in language facilitation (Gibbard, 1994), single subject designs have been most widely used for assessing who benefits from the training and what benefits are obtained.

Children with language delays are typically targeted for services before school age. Thus, parents of children with language delays under the age of 5 have been the target for parent training of language enhancing techniques. In the case of parent training, McDade et al. (1987) noted that altering the parents’ interactive behavior is the primary goal of the intervention. When considering this goal, treatment integrity of parents’ use of the facilitative techniques becomes a crucial issue for assessing the effectiveness of the intervention. Treatment integrity is an emerging issue in parent training. Many studies have failed to measure it or have used intrusive techniques, such as the presence of the trainer in the home, which could induce reactivity.

The present study proposed to extend the current literature in three areas. First, it was crucial to establish treatment integrity in an unobtrusive manner. It is important for
researchers to know if and how parents will implement the procedures in the most naturalistic setting. Since the goal of parent training is to change the parents’ behavior, researchers need to address which behaviors change with and without intensive feedback. This study aimed to measure treatment integrity with minimal intrusiveness and to frequently monitor behavior change for the purpose of providing feedback.

Previous research has used extensive and lengthy training procedures that may be impractical for most parents and clinicians. Therefore, the second central variable of this study was to reduce the length of training and to narrow the focus of trained procedures. Since training parents to be language facilitators has been acknowledged as important to improving children’s language achievement, it was imperative that procedures used to train parents be accessible to parents and clinicians with varying availability of resources.

This study proposed three main questions: (1) Would parents be able to apply the language facilitative techniques while using these activities to interact with their child following a single training session? (2) If not, would feedback be an effective procedure to promote adequate implementation? (3) Once the language facilitative techniques are implemented, would they lead to increases in spontaneous speech and target language skills for the participating children?
Method

Participants and Setting

Participants were four primary caregivers of children with expressive language delays who are between the ages of 3 and 5. A description of the participants can be found in tables 1 and 2. They were recruited from a local private speech school for children with language delays. This school serves children with language disabilities. All training and feedback were provided by the author and took place in the homes (training and some feedback sessions) and over the phone. Parental interactions using the trained procedures with the child took place within the participants’ home with no trainer or clinician present. Primary coders coded the audio taped interactions of the in-home sessions and a secondary coder coded for reliability.

Materials

Training sessions included handouts. The handouts described the procedures that were trained. Parents were provided with a collection of materials including recorders, tapes, timers, manipulatives, stickers and a calendar. Tape recorders and tapes were used to record play sessions between the parents and children in their homes. The parents used timers for timing the sessions. Manipulatives consisted of toys and books. Parents were instructed to only use the manipulatives for the play sessions. Toys and books were selected based on the child’s interests and target language. Items included play-doh, blocks, action figures, magnets, games, and books. A minimum of four manipulatives was chosen for each child. Children placed a sticker on their calendar after each session. A variety of stickers was provided to each family.
<table>
<thead>
<tr>
<th>Family</th>
<th>Marital Status</th>
<th>Education</th>
<th>Occupation</th>
<th>Age</th>
<th>Race</th>
<th>Sex</th>
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</table>
Table 2
Child Characteristics

<table>
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<tr>
<th>Family</th>
<th>Age (mos.)</th>
<th>Mean Length (MLU)</th>
<th>Expressive Language Delay</th>
<th>Target Words</th>
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<td>A</td>
<td>47</td>
<td>1.5</td>
<td>18 months</td>
<td>3 prepositions, color + object, big/little + object, describing with shape words</td>
</tr>
<tr>
<td>B</td>
<td>60</td>
<td>4.0</td>
<td>15 months</td>
<td>5 preposition, 3 present participle action words</td>
</tr>
<tr>
<td>C</td>
<td>72</td>
<td>4.9</td>
<td>24 months</td>
<td>6 prepositions, 3 present participle action verbs</td>
</tr>
<tr>
<td>D</td>
<td>61</td>
<td>3.0</td>
<td>18 months</td>
<td>5 prepositions, 3 present participle action verbs</td>
</tr>
</tbody>
</table>
Response Definitions

Parent Behaviors. Four parent behaviors were recorded. Parent behaviors included feedback, model, mand, and use of the target language. Also, integrity of treatment implementation was reported by dividing the number of sessions conducted by total required sessions and then multiplied by 100.

Feedback was defined as any verbal acknowledgement by the parent that followed a response made by the child. The child may have been responding to a model, mand, yes or no question; commenting about an object; or making a request. Parental feedback may have been positive, negative, or corrective. Positive feedback was when the parent acknowledged or praised a verbal or nonverbal response made by the child. Negative feedback was when the parent indicated that the preceding child behavior was wrong or unacceptable. Corrective feedback was when the parent corrected or expanded a child’s response (Alpert et al., 1992).

Models were defined as imitative prompts (Warren et al., 1984). Imitative prompts occurred when the parent stated a word, phrase or sentence for the purpose of prompting the child to imitate all or part of the production (Alpert et al., 1992). Either/or questions were considered a model because they required the child to imitate a portion of the prompt. Also, parents were trained to use models for talking about their or their child’s actions. Thus, when a parent described actions it was coded as a model (ex. “You are pushing the the play-doh.” Or “I am pulling it apart.”)

Mands were defined as instructions to verbalize or non-yes/no questions (Warren et al., 1984). Mands also included partially completed statements that required non-
imitative responses (Alpert et al., 1992). When the parent used a target word, use of target language was recorded.

**Child Behaviors.** Five child behaviors were recorded. These behaviors included related response, imitated target word, non-imitative target word, spontaneous speech and imitated non-target word.

Related response was defined as any correct, related verbal response the child produced in response to the mother’s use of a mand. Specifically, this was scored when the child responded appropriately to a when, how, why, where, or what question; correctly completed a statement with a non-imitative verbalization; or responded to an instruction to talk. Imitated target word was scored when the child used a target word after the parent-modeled use of the target word. Non-imitative target word was scored when the child either used the word spontaneously or when the parent prompted use of the word, typically through the use of a mand. Spontaneous speech occurred when the child made any non-target vocalization without parental prompting or modeling, this included but was not limited to requests and questions.

**Generalization.** Once a week, each child met individually with the trainer for the purpose of collecting generalization data. The trainer used objects such as a wagon, blocks, and small plastic animals to assess the children on their target language. Each child had five lists of their target language words that varied the order of word presentation. The trainer used a different list each week and followed the written order. The objects were placed to represent to target word (ex. behind, above, in front of) and the child was asked to state the position of one of the objects (ex. “Where is the cow?”). The experimenter varied which objects were used each week to represent the different
target words. An exception to this rule was the use of the wagon to represent pushing and pulling. For these words the experiment would ask, “What am I doing?”

Data Collection and Reliability

The trainer instructed parents to record a 15-minute play session with their child four times per week. They were instructed to turn in weekly tapes for data collection. The tape recordings were used to record occurrence of parent and child behaviors using interval recording by the primary coder. Intervals were divided up into 60 15-second intervals. Reliability was checked on one to two of the sessions on each tape by the secondary coder. Number of sessions varied on each tape. The primary coder was not aware of which sessions were checked for reliability until after data collection was finished. Inter-observer agreement was used for checking interrater reliability and calculated by dividing the number of agreements by the number of agreements plus disagreements for each session and multiplying by 100%.

A second observer collected reliability for 26 percent of the sessions for parent behaviors. The mean reliability for target language was 97% (range, 90% to 100%). For models mean reliability was 91% (range, 83% to 97%). Mean reliability for feedback was 92% (range, 86% to 97%) and for mand was 89% (range, 78% to 98%).

Child behaviors were rated by a secondary observer for 28 percent of the sessions. Mean reliability for related responses to mands was 94% (range, 85% to 97%) and for spontaneous language was 90% (range, 83% to 100%). Imitated target word reliability was 98% (range, 93% to 100%) and for nonimitated target word was 98% (range, 93% to 100%). Imitated speech had a mean reliability of 95% (range, 87% to 100%).
Experimental Design and Data Analysis

A multiple baseline staggered across parent-child dyads was used to assess the effectiveness of the parent training procedures. The number of techniques used by each parent per session was counted and graphed. Visual inspection of the graphs comparing baseline usage to usage during treatment was used to determine the efficacy of the training procedures. Also, child behaviors were counted and graphed to determine child’s response to the parent’s usage of the techniques.

Procedure

Parent Consent and Interview. Parents who had volunteered to participate by previously signing a consent form were interviewed to establish rapport, explain the study, and obtain detailed information about their child. The parents were informed that their participation was voluntary and that they may withdraw from the study at any time. In addition to providing consent to participate in the study, consent also included the consultant obtaining permission from the parent to gather information from the child’s teacher and the child’s school file.

Target Language. The children’s teachers, parents, and files were referred to for information regarding target language skills. Parents were asked to report what their current goals were for the target child’s expressive language skill development. After compiling a list of parent goals, the parents were then asked to report on their child’s usage of words from a list of words compiled by the trainer. The words on the list were obtained from a curriculum guide for basic language and learning skills (Partington & Sundberg, 1998). Teachers were also interviewed for information about the target children. Specifically, teachers were asked to report what their current goals for the
children were in the classroom. They were also questioned about possible target language skills that were identified during the parent interview. Parents and teachers were also asked to report what the children enjoyed playing with and any favorite cartoon characters or superheroes. This was done to aid the experimenter in supplying manipulatives that the children would enjoy playing with. Based on these reports, can’t do/won’t do assessments were conducted with the children. These assessments consisted of the experimenter playing with each child in an incidental fashion while assessing for the expressive target language skills. Each target word was assessed twice. The first time no incentive was offered for compliance. The second time the child was given favorite candy, juice, or chips for compliance with mands. Favorite items were selected based on a multiple selection without replacement preference assessment. The items used for the assessment were items reported by teachers and parents as preferred edibles. Target language for the intervention was selected for each child based on the reports and assessments. Expressive target words were selected if the child failed on two out of two attempts to use the word. After target language selection, the intervention materials or manipulatives for each child were selected for use during the study. These materials included play-doh, blocks, games, and books. At least four items were chosen for each child. Items consisted of a minimum of six parts and were relevant to the child’s target language skills. For an item to be relevant it had to be able to be used to represent at least two of the target words. Parents were told that they could add items to the box but they had to remain in the box till the end of the study. Items added by the parents consisted of shapes, cups, books, pegs, and stringing beads.
Baseline. Parents were given access to the materials and target words selected for use with their child but did not receive any specific instructions for use of the materials or words. Parents were also supplied with a timer, tape recorder, tapes, calendar, and stickers. The parents were instructed to set a specified time, four days a week, for conducting a 15-minute play session with their child. They were also told to conduct the session in a room free of distractions with the TV off. Parents were instructed to ignore the phone or doorbell. If the session were to be interrupted, parents were asked to turn the tape and timer off and to continue playing as soon as possible. Each play session was timed and recorded. The parents were instructed to play as they normally would with their child, using only the provided materials. During baseline a routine playtime was established for each family. Also, use of the tape recorder during baseline allowed resolution of complications, such as, the tape recorder not close enough to the area of play.

Treatment. The first parent received training after two weeks in baseline. Training was staggered across parents. A new parent was trained each week. The study length varied between families. The length of the study was between eight to twelve weeks. The length varied due to illness and vacations.

Training was conducted in the parents’ homes at a time that was convenient for the trainer and the parents. Training consisted of handouts and a discussion about each technique and how it could be used to facilitate use of the target words with the provided toys and books. Parents were trained to use incidental teaching while incorporating the use of mands, models, and feedback for facilitating their child’s language use. The parent was asked to give examples of how they would use each procedure while playing
with their child. Also, examples of how target words could be incorporated into play with the materials was discussed. Training will last approximately 60 minutes. After training, parent’s questions were answered and the parent was asked to fill out a questionnaire on acceptability of the intervention for assessment of the social validity of the intervention (Witt, 1983). All parents were asked to maintain the play sessions four times per week without distractions at the regularly scheduled time. If failure to conduct sessions for at least three times a week occurred, parents received random prompting at the time of the scheduled session via telephone twice a week until they maintained four sessions a week. Parents were asked to turn their recorded sessions in once a week. The sessions were listened to by the trainer and graphed.

**Feedback.** The trainer supplied weekly feedback two weeks after the parent was trained. Feedback was supplied at the homes of the families and lasted approximately 20 minutes. All feedback sessions addressed how many times per week the intervention was implemented and if the parent needed to increase their implementation. If a parent had failed to conduct more than 2 sessions in the previous week that parent received two random phone calls scheduled around the time of typical implementation the following week. This was done until the parent was able to implement four sessions in one week.

The purpose of feedback during this phase was to encourage optimal use of the techniques while giving parents ideas of how the techniques could be used to teach target language skills. The first feedback session consisted of showing the parent(s) two graphs, giving examples of how they used the techniques appropriately, and giving examples of what they could do to use the techniques more effectively. Graphs used for the first session consisted of one graph depicting their child’s responses to their mands.
and another representing their child’s total use of the target language. The trainer chose these graphs because they represented how the child was responding to the parent’s verbal behavior and if they were making gains in their use of the targeted language skills. While listening to the tapes the trainer made notes about good examples of the use of the techniques and examples of when they could use they techniques but had not used them. After showing and discussing the graphs, the trainer praised the parents for their hard work and gave two good examples from the tapes of how they used the techniques appropriately. The trainer then discussed ways they could use the techniques where they had not previously. An example of this type of feedback consisted of redefining a mand and a model. The parent was given an example of a mand they used frequently on the tape, such as a where question. The parent was told that a good opportunity for using a model is when the child does not provide an answer within 3 seconds of the mand or when the child answers inappropriately. At this point the parent should model the answer to the question and then re-present the question to the child one more time. If necessary, the parent should model again and then move on with something new. This feedback was given to every parent in the first feedback session because the parents would give the same mand over and over again without providing a model of the correct answer for the child. Feedback was also provided for use of feedback to every parent during every weekly feedback session because they failed to use feedback for over 25 percent of the intervals.

The second week of feedback was provided over the phone and consisted of praises and examples for appropriate use of the procedures and examples of when they could use the procedures where they had not during the previous sessions. All
participants received the first two weeks of feedback. Only three of the participants received the third week of feedback and two received the fourth week of feedback. The third week of feedback was conducted in the home and was identical to the first week except no graphs were used. The fourth week of feedback was conducted over the phone and used the same procedures as the second week of feedback.
Results

Parent

Data for the mother behaviors were calculated by taking the total number of intervals in which the behavior occurred and dividing by the total number of intervals in the session (typically 60) and multiplying times 100. Integrity of treatment implementation ranged from 53 to 84 percent for session implementation. Parent A had 69 percent, Parent B had 83 percent, Parent C had 53 percent, and Parent D had 84 percent. Parent C was not able to maintain sessions more than two times per week after treatment, thus two weekly random phone calls were delivered every week to prompt implementation during the weekly feedback phase. The parent was not able to implement at the required 4 times per week thus received phone calls till the end of the study. She reported that her work schedule was too demanding for her to maintain the implementation schedule.

Figures 1-3 represent the parents’ use of each of the techniques. Each of them represents the multiple baseline design across parents.’ Each graph depicts the percent of intervals in which the specified technique was used. As presented in figure 1, during baseline the range of parents’ use of mands during intervals was between 18 and 90 percent use. After training, parent C exhibited a small increase that is difficult to evaluate with confidence due to the small number of data points. Clear changes for mand use following training or performance feedback were not evident for the remaining parents.

As figure 2 shows, parents use of models ranged from 13 to 72 percent during baseline. After training, parent A showed a slight increase in use while the other parents’
Figure 1. Percentage of Intervals for Parent Use of Mands
Figure 2. Percentage of Intervals for Parent Use of Models.
Figure 3. Percentage of Intervals for Parent Use of Feedback.
use approximated baseline levels. Weekly feedback had no effect on level of parents’ use of models.

Parents’ use of feedback during baseline ranged from 17 to 88 percent. Only parent C showed an increase in use of feedback after training which is difficult to evaluate due to the small number of data point. The other parents maintained baseline levels of responding. Weekly feedback resulted in a return to baseline levels for parent C. All other parents maintained baseline levels during the weekly feedback phase.

Use of target language by parents ranged from 0 to 33 percent use during baseline (see Figure 4). Parent A used target language during baseline but was on a downward trend before training was implemented. Parents B and C did not use the target language at any consistent level during baseline. Parent D used the target language consistently in baseline at a level below 20 percent before training. After training parents B and D showed a slight increase in use of target language, while parents A and C showed levels consistent with baseline performance. During weekly feedback all parents increased their use of target language. Levels ranged from 0 to 88 percent use.

Treatment acceptability was assessed after training and at the conclusion of the study. On a scale of 1 to 6, Parent A had an average pre-intervention rating of 5.9. At the conclusion of the study his mean rating was 6. Parent B had a mean rating of 5.1 before use of the intervention and a mean rating of 5 at the conclusion of the study. Parent C rated the intervention on average as a 5.5 before treatment and a 5.2 after. Parent D had a mean rating of 6 before treatment and a mean rating of 4.9 after.
Figure 4. Percentage of Intervals for Parent and Child Use of Target Language.
Child behaviors were scored and calculated using the same method described for parent behaviors. Figure 4 depicts the child’s total target language use in reference to the parent’s use. Child use of the target language ranged from 0 to 16 percent during baseline and was highest for child D whose parent also had the highest usage of target language during baseline. Typically, child’s use of target language was parallel to the parent’s use. Thus, after training, child use of target language had a slight increase similar to the parents’ increase. During weekly feedback, increase in use of target language occurred for all the children similar to the increases observed for the parents.

Figure 5 subdivides child’s use of target language into imitative and non-imitative. Imitative use ranged from 0 to 13 percent during baseline while non-imitative ranged from 0 to 4 percent. After training, both imitative and non-imitative use of target language increased for all children. The range during this phase was between 0 and 12 for imitative and between 0 and 5 for non-imitative. During weekly feedback use of both non-imitative and imitative target language increased again for all children. Imitative ranged from 0 to 27 percent use, while non-imitative ranged from 0 to 26 percent use.

Child response to mand is graphed in figure 6. During baseline, responses to mands ranged from 18 to 90 percent. After training, responses remained similar to baseline levels for children A, B, and D, while child C showed an increase. During weekly feedback child B exhibited response to mands that was above baseline levels. The response to mands for the remaining students was similar to baseline during weekly feedback.
Figure 5. Percentage of Intervals for Child Use of Imitative and Non-Imitative Target
Figure 6. Percentage of Intervals of Child Response to Parent Mand.
Total imitation levels during baseline ranged from 0 to 73 percent during baseline. As graphed in figure 7, child A’s imitation decreased to below baseline levels while the three other participants’ imitation levels remained similar to baseline levels. During weekly feedback child A’s and child D’s imitation levels were similar to baseline levels. Child B and Child C had slight increases in the total imitation.

Children’s spontaneous utterances are displayed in figure 8. Baseline levels ranged from 0 to 62 percent during baseline. Child A showed a slight increase then decrease in level of imitation after training compared to baseline levels. Child B’s and child D’s levels were similar to baseline levels of percent imitation. Child C showed a slight decrease in imitation after training. During weekly feedback, Children A and C all showed an increase in level of imitation compared to baseline and Child B exhibited a positive trend at the end of the study.

During generalization probes only one participant showed an increase in expressive knowledge of target language. Mean scores on generalization probes are in table 3. Week 8 of generalization was missed due to illness. His knowledge was variable for target words during baseline. The target words he expressed appropriately during baseline varied from session to session. After training, he expressed knowledge of the same three words at stable levels. During weekly feedback, the number increased and he was able to appropriately express 6 out of 8 target words in the last session.
Figure 7. Percentage of Intervals for Child Total Imitation of Parent Verbal Behavior.
Figure 8. Percentage of Intervals for Child Spontaneous Language.
Table 3

Mean Scores for Generalization

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<th>Child</th>
<th>Baseline</th>
<th>After Training</th>
<th>Weekly Feedback</th>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
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<td>3</td>
<td>5</td>
</tr>
<tr>
<td>C</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>
Discussion

Results of this study showed that parents were able to implement the use of mands, models, and feedback during baseline at a mean level of 46 percent. They maintained relatively stable labels throughout the study. Although parents used the techniques generally, teaching of specific target skills did not increase until weekly feedback was provided. Two parents implemented sessions 4 times a week with above 80% integrity. Parent C was only able to implement sessions at 53%. This parent received biweekly phone calls during the weekly feedback phase to prompt for session implementation. Feedback resulted in an increase in implementation with parent C increasing implementation from 25% following training to 56% during the weekly feedback phase. Parent A did not conduct more than two sessions for one week after training and two weeks during weekly feedback. An alternative method of prompting was used for this family because the mother and trainer saw each other twice a week at the school. The father was the main parent involved in conducting the sessions. The father had frequent day trips out of town for work and was not home in time to conduct some sessions. The mother had agreed to conduct the sessions that were going to be missed. During weekly feedback, the mother was prompted to conduct sessions by the trainer approaching her twice a week at the child’s school to inquire about whether she was able to complete sessions. After training the family implemented sessions at 63% and during weekly feedback they implemented at 66%; therefore, feedback had relatively little effect on this family’s implementation. Future research should address whether face-to-face prompting at a time distant from the actual time of session occurrence or
prompting at the time of session occurrence without face-to-face interaction with parents is more effective.

The parents in this study used the language facilitation techniques at a higher rate during baseline than participants of previous research. This may have occurred for two reasons. First the criteria for a parent verbalization to be classified as a model or mand were more lenient than previous studies with parents, which may have resulted in more frequent scoring of their occurrence. Specifically, Alpert et al. (1992) and Kaiser et al. (1995) used a model procedure where the parent was required to complete all steps of the procedure for the verbalization to be considered a model. The model procedure consisted of the parent using a model relevant to the child’s focus of interest, giving feedback to child for an appropriate response or providing a corrective model for an inappropriate response, and giving feedback for an appropriate response where a corrective model was needed. Warren et al. (1984) scored models as occurring only if the teacher, using a procedure described as the mand-model procedure, presented them after the use of a mand. In the present study, models were defined based on all of these studies but independent of what verbalizations followed. Specifically, a model occurred if the parent modeled a verbalization relevant to the child’s focus of interest or one occurred when the parent provided an appropriate response to a previously delivered mand.

Warren et al. (1984), Alpert et al. (1992), and Kaiser et al. (1995) required a mand-model procedure for use of mands to be scored. Specifically, a mand related to the child’s focus was presented, followed by feedback for appropriate child response, for inappropriate response or no response a second mand was presented or model of the answer, and feedback for appropriate response after model or second mand. In the
present study, a mand was scored as occurring based on its definition as an instruction, incomplete statement, or question that requires a nonimitative response (Alpert et al., 1992). The overall difference between these definitions was whether or not feedback was included as part of the procedure or as a separate behavior. In the present study, feedback was scored as a separate behavior and was not necessary for the occurrence of a mand or model to be scored. Collectively the mand and model definitions employed in this study may have been more lenient and more reflective of naturally occurring interactions than those employed in previous research. If this is the case, the higher levels of mand and model may reflect a more naturalistic assessment of parent child interactions.

A second possibility for the higher rate of use of the procedures during baseline may be due to the characteristics of the participants. All parents of this study had a college degree or higher. Alpert et al. (1992) had only one participant who had completed a college education. This participant averaged 15 correct teaching episodes during baseline while the other participants generally did not exceed 10. Child characteristics may have also contributed to the difference in results. Kaiser et al. (1995) noted that parents of verbally responsive children are immediately reinforced for their attempts to implement procedures, while parents of children with few verbal attempts may have to implement complex teaching episodes that provide corrective models. Therefore, if the children have fewer verbal attempts, it was more difficult for a parent in these previous studies to have a correct teaching procedure scored as occurring because the procedure for no response or an incorrect response from the child inherently requires more steps of the procedure to be implemented. Consequently, parents of children who had a higher percentage of responsiveness averaging above 60% in the Kaiser et al.
(1995) study had higher frequencies of correct procedures during baseline than the parents of children who had responsiveness averaging below 20%. In this present investigation, scoring of the parent behavior was independent of the child response. Thus, child differences should not have affected the parents’ use of mands and models. Feedback did have the potential to be affected because children with more vocalizations have more opportunities to receive feedback for verbalization attempts.

Kaiser et al. (1995) examined how use of techniques affected child use of individualized target language skills. The specificity of target language varied from signing the word “more” for one participant to spontaneous use of agent/action/object and adjective + noun in 3 word sentence for another child. Kaiser et al. (1995) found that parents’ frequency of teaching episodes in which their child’s communication targets were taught increased during group training. Two participants in this study also showed a higher increase in use of targets during individual training while three of the participants’ levels remained unchanged from group training levels. The current investigation found similar results by showing that training was required to increase percentage of intervals where target language skills were taught; but consistently higher levels of teaching target skills were not achieved until weekly feedback was implemented.

Kaiser et al. (1995) found slight increases in child’s use of target communication for four out five of the participants during their group-training phase. During their individual training phase, two children showed an increase in trend for use of target language. These were the children of the two parents who also showed an increase during individual training. The children’s use of target skills increased or decreased
relative to their parents’ use of the targets. Specifically, when the parents showed a
decreasing or increasing trend in use of targets, their child’s usage tended to parallel that
trend. The previous study showed similar trends in children’s use of target language.
Three out of four children showed a small increase after training but all children showed
higher increases during weekly feedback when their parents also showed higher percent
use levels of target language. Therefore, results from that investigation showed that
weekly feedback was necessary to promote adequate implementation of procedures to
teach target language and once parents’ use increased child use of target language also
increased.

Limitations and Directions for Future Research

One limitation of this study was that two families had both parents implementing
the procedures when only one parent had received training. Family A had the father as
the main implementer with his implementation occurring for 74% of the sessions, the
mother implemented 17% of the sessions, and both parents were present for 9% of the
sessions. The mother of family A said that she would be implementing the sessions after
baseline was finished therefore she was trained on the facilitation techniques to conduct
the sessions. Thus, the father was not trained by the trainer but did receive the handout
and weekly feedback. Family B also had both parents conducting sessions. The mother
implemented 68% of these sessions, the father implemented 29%, and both parents
implemented 3% of sessions together. The mother was the parent trained to conduct
sessions but both parents were present for the weekly feedback sessions. Future research
could look at generalization of use of techniques from one parent to the other. Separate
baselines for parents would have to be established with parents alternating
implementation each night. This might also affect integrity of implementation since the
demand to implement would be shared by parents and not placed on only one parent.

Characteristics of the participants may have also been a limitation to this study. The parents of the children in the current investigation consulted with their child’s teachers and therapists on a continual basis to assess what they should work on at home with their child. All participants had been attending the school for at least one year, thus were possibly exposed to facilitation techniques prior to participation in this study. Effects of training may have been more visible for parents new to the school that had no possible previous contact with the facilitation techniques. Also, the children were relatively higher functioning than children from the previous studies, and this may have affected the parents’ preexisting interaction techniques they used with their children.

Future research should look at the effects of training parents to teach specific targets versus training parents to teach more general language skills. Alpert et al. (9192) suggested that teaching general targets would have a broader-based impact while specific targets would focus on remediating particular deficits. Effects of teaching specific skills might show more of an immediate effect on language, where as teaching broad skills might take longer to show an impact on a child’s language use. Future research should address this issue.

The effects observed in this study were modest and may have increased with longer periods of implementation. Generalization of language targets may have been more successful after a longer period of implementation of the techniques used to teach the targets. Kaiser et al. (1995) noted that parent training or formal practice should
continue beyond the point where parents are implementing the procedures effectively, especially when children are in the beginning stages of language development.

Finally, future research should address how parents may use incidental teaching for other skills. It may be possible for parents to prepare their preschool aged children for school by teaching simple academic skills with incidental teaching. Parents could teach letter recognition, number recognition, or letter sounds to their child while interacting with them during daily activities. Daily activities for teaching letter and number recognition may consist of any activity where the parent and child are looking at printed material, such as books or cereal boxes. Letter sounds may be taught by restricting access to items dependent on child attempt to say what sound the item’s name begins with and possibly naming the letter that makes that sound.
References


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