Characteristics of Naturalistic Language Intervention Strategies

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Abstract

A content analysis of six naturalistic language teaching strategies is reported. The six strategies are enhanced milieu teaching, incidental teaching, responsive parenting, two different types of responsive teaching, and It Takes Two to Talk. Features and characteristics common to all six strategies as well as those that are method-specific are described. Characteristics that stand out as particularly important include interest-based child learning; use of everyday naturally occurring activities as contexts for child-initiated interactions; adult sensitivity and contingent social responsiveness to child initiations; and joint attention plus turn taking as activities for sustaining adult-child interactive exchanges. Other characteristics that have value-added effects are also described. Application of these features to the authors' research and practice is also discussed.

Keywords

naturalistic teaching, milieu teaching, incidental teaching, responsive parenting, responsive teaching, child communication, child language

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Intervention methods in general, and those used to promote early communication and language development in particular, can be categorized as either formal or informal teaching strategies. Formal strategies, or explicit instruction, include methods that have clearly defined instructional targets and involve the systematic use of instructional strategies to prompt and direct child learning (Connor, Morrison, & Slominski, 2006; Sénéchal, LeFevre, Thomas, & Daley, 1998). Informal strategies, or naturalistic instruction, includes teaching methods that are responsive to a child's initiations or attempts to communicate, where adult responsiveness to child behavior is used to reinforce and maintain child engagement with people and materials (Peterson, 2004). Both strategies include specific methods and procedures for promoting child learning and development, and both strategies are appropriate for affecting changes in child behavior depending on the focus and goals of instruction (see especially Wolery, 1994; Wolery & Sainato, 1996). The differences between formal and informal teaching methods are often described, respectively, as adult-directed and child-directed practices (e.g., Mahoney, Robinson, & Powell, 1992).

Naturalistic teaching, which is the focus of this paper, is not one instructional strategy but rather a collection of teaching methods. Naturalistic intervention strategies are now generally considered methods of choice for promoting early communication and language development when interventions are implemented in the contexts of everyday activities in both naturally occurring and relevant situations (Wolery, 1994). These informal, child-directed methods and strategies have been extensively reviewed and analyzed (e.g., Lowenthal, 1995; Peterson, 2004; Santos & Lignugaris-Kraft, 1997; Schwartz, 1987). These reviews have either focused on selected features of the intervention strategies or have described the settings in which the methods have been used. Our review differs from these previous reviews by unpacking and describing the key characteristics of six naturalistic teaching methods. Our review also differs from others by illustrating how the key characteristics of naturalistic teaching resemble those of parenting behaviors known to enhance the performance of young children in multiple developmental domains, communication and language being just one of those domains (Dunst & Kassow, 2008; Nievar & Becker, 2008; Richter, 2004; Trivette, 2007). We conclude by describing a model of everyday language learning that uses responsive teaching as a naturalistic instructional practice for promoting the communication and language development of infants, toddlers, and preschoolers with developmental disabilities or delays.

■ NATURALISTIC TEACHING STRATEGIES

The six naturalistic language intervention strategies addressed in this paper include *enhanced milieu teaching* (Kaiser & Hester, 1996), *incidental teaching* (Hart & Risley, 1978; Hart & Risley, 1982; McGee, Krantz, & McClannahan, 1986), *responsive parenting* (Landry, Smith, & Swank, 2006), two different types of *responsive teaching* (Mahoney & MacDonald, 2007; Raab & Dunst, 2009), and *It Takes Two to Talk* (Girolametto & Weitzman, 2006). These strategies were selected for review because they have been a) used to promote the early communication and language development of preschoolers; b) used by either early childhood practitioners or parents or both; c) used in a variety of home, community, and preschool settings; and d) used with young children who are delayed in their communication and language development. Other naturalistic teaching strategies that are typically implemented under more controlled conditions (e.g., Field, 1982) or in simulated settings (Koegel, Koegel, Harrower, & Carter, 1999; Koegel, Koegel, Shoshan, & McNerney, 1999)

were excluded to focus on those teaching methods that could be integrated with everyday activities and routines (Dunst, Hamby, Trivette, Raab, & Bruder, 2000; Grisham-Brown, Pretti-Frontczak, Hemmeter, & Ridgley, 2002).

CONTENT ANALYSIS

We began our examination of the six naturalistic strategies by conducting a content analysis to identify their key features. The analysis revealed that these strategies, collectively, included 11 key features, as summarized in Table 1. Three of the features pertain to different aspects of child behavior. Three pertain to the activity settings and contexts for naturalistic teaching, and five pertain to the methods and strategies used by adults to engage children in interactions with people or materials and to promote child learning and development.

Child characteristics. The three child features that are the focus of naturalistic teaching include strengths-based practices, interest-based child learning, and the behavior outcomes or expectations that are the targets of intervention. Methods that use strengths-based practices focus on existing child behavior capabilities as the building blocks for supporting and strengthening child communication and language competence (Dunst, Raab, Trivette, Parkey, Gatens, Wilson, French, & Hamby, 2007; Wilson, Mott, & Batman, 2004). Interest-based child learning uses personal interests (e.g., child preferences) or situationally interesting material or events as a basis for engaging a child in interactions with people or material (e.g., Danis, 1997; Deckner, 2002; Pruden, Hirsh-Pasek, Golinkoff, & Hennon, 2006). The child behavior outcomes that are the focus of naturalistic teaching include either specific behavior targets (e.g., Girolametto, Pearce, & Weitzman, 1996; Hemmeter & Kaiser, 1994) or classes of pivotal communicative behavior (e.g., Mahoney, Kim, & Lin, 2007; Morales, Mundy, Delgado, Yale, Messinger, Neal, & Schwartz, 2000). The three child behavior features are intended to elicit and facilitate the production of behavior that a child can use to initiate interactions with people or material and that provide an adult the opportunity to reinforce and influence child communicative competence (e.g., Ruble & Robson, 2007; Yont, Snow, & Vernon-Feagans, 2003).

Activity setting characteristics. The different everyday activity settings (Farver, 1999; Kertoy & Vetter, 1995) and routines (Black & Teti, 1997; Cote, 2001; Woods & Kashinath, 2007) that are used as the contexts for child learning, and the types and range of within and across setting learning opportunities afforded in the settings, are the contextual features of naturalistic teaching. The everyday activities and routines that are the settings for child communication and language development include, but are not limited to, child routines (e.g., bath time), early literacy activities (e.g., shared book reading), family routines (e.g., mealtimes), play routines (e.g., parent-child lap games), community outings (e.g., library story times), and preschool classroom or child care activities (e.g., singing and dancing). Within-activity learning refers to the number of times a child has an opportunity to produce the same or similar communicative behavior in the same activity; whereas across setting learning refers to the number of different activities or routines that are the contexts for promoting generalized use of communicative behavior (Dunst, 2006; Dunst & Swanson, 2006). Inasmuch

as certain settings and routines are more likely than others to be the contexts for demonstrating communicative competence (e.g., Kertoy & Vetter, 1995; O'Brien & Bi, 1995), the particular activities that are used as part of naturalistic teaching are generally a major focus of this instructional method (Hoff-Ginsberg, 1991; Rollins, Wambacq, Dowell, Mathews, & Reese, 1998; Tattershall & Prendeville, 1995).

Adult characteristics. The adult behavior and practices that are the focus of naturalistic teaching include the methods used to promote (1) child engagement in interactions with people and objects or materials, (2) sensitivity to and contingent social responsiveness to child communicative attempts, (3) positive adult affect manifested during interactions with a child, (4) the establishment of joint attention and reciprocal child-adult interactions, and (5) elaborations in child communication and language competence. These features, collectively, represent an interactive style that encourages and supports child communication and language competence (Enz & Christie, 1993; Kim & Mahoney, 2004)

The methods and procedures used to promote child engagement with people and materials involve strategies for encouraging a child produce behavior that can be responded to in a way to continue his or her engagement with the social or nonsocial environment (Jones & Warren, 1991; Neuman & Roskos, 1990; Ostrosky & Kaiser, 1991). Such strategies include arranging the social and nonsocial environment to increase the likelihood that a child will communicate (Baker, Sonnenschein, Serpell, Scher, Fernandez-Fein, Munsterman, Hill, Goddard-Truitt, & Danesco, 1996; Sénéchal, LeFevre, Thomas, & Daley, 1998; Vincent, 1996) and introducing novel or especially salient objects or events that elicit or evoke child initiations (Danis, 1997; Hart & Risley, 1974; Houston-Price, Plunkett, & Duffy, 2006; Pruden, Hirsh-Pasek, Golinkoff, & Hennon, 2006).

Caregiver contingent responsiveness refers to interpreting child behavior as an intent to communicate (Baird, Haas, & Mayfield, 1993; Haas, Baird, McCormick, & Reilly, 1994; Zeedyk, 1997), adult sensitivity to a child's attempts to initiate interactions or communicate (Lohaus, Keller, Ball, Elben, & Voelker, 2001; Paavola, Kemppinen, Kumpulainen, Moilanen, & Ebeling, 2006), and responsiveness to these behavior as a means to reinforce and sustain child initiations and communicative bids (Paavola, Kunnari, & Moilanen, 2005; Yoder & Warren, 1998). Positive adult affect refers to parent or practitioner smile, touch, verbalizations, and other behaviors that communicate to a child pleasure in his or her attempts to interact or communicate (Leibowitz, Ramos-Marcuse, & Arsenio, 2002; Nicely, Tamis-LeMonda, & Bornstein, 1999).

Joint interactions include joint attention, turn taking, reciprocity, and other "your turn-my turn" activity that maintains child engagement with adults or material and reinforces child production of interactive and communicative behavior (Flom & Pick, 2003; Kochanska & Aksan, 1995; Laible & Thompson, 2000). Child behavior elaboration refers to any number of methods that are used to promote more developmentally advanced child interactive and communicative behavior (Loeb & Armstrong, 2001; Yoder, Spruytenburg, Edwards, & Davies, 1995).

The adult behavior and practices that are features of natural-

Table 1. Features and Elements of the Six Naturalistic Teaching Strategies

Features/Elements	Description
Child Characteristics	
Strengths-based practices	Child behavioral capabilities are used as the foundations for promoting the acquisition of communicative and language competence
Interest-based learning	Either or both personal or situational child interests are used as the foundations for competence expression
Behavior outcomes	Either specific child behavior (e.g., pointing) or a class of pivotal child behaviors (e.g., request gestures) are the targets of intervention
Activity Setting Characteristics	
Everyday activities/routines	Everyday, naturally occurring activities and routines are the contexts and settings in which teaching occurs
Within setting learning opportunities	Multiple learning opportunities within a single activity or routine are the focus of intervention
Across setting learning opportunities	Across activity setting learning opportunities are used to promote child competence in different activities and routines
Adult Characteristics	
Child engagement	Methods and strategies to engage a child in interactions with people and objects/material
Caregiver responsiveness	Adult sensitivity to a child's attempt to initiate interactions and contingent social responsiveness to child behavior
Positive adult affect	Positive affect displayed by an adult during child--adult interactions that reinforces and sustains child engagement in communicative exchanges
Joint interactions	Methods and strategies that encourage joint attention, turn taking, and reciprocal child--adult interactions
Child behavior elaborations	Methods and procedures for promoting elaborations in child behavior competence

istic teaching both promote child communication and language behavior, and shape and influence higher levels and more complex communicative and language competence (Dunst, Lowe, & Bartholomew, 1990). These behaviors and practices place primary emphasis on child-directed caregiver-child interactions where adults structure and guide child learning rather than direct that learning.

COMMON AND TEACHING METHOD-SPECIFIC CHARACTERISTICS

Further analysis of the six naturalistic teaching strategies shows which features are common to all strategies and which are method-specific. Each teaching method was examined to identify which of the 11 features listed in Table 1 were key elements and to further unpack the strategies to identify additional characteristics of the instructional strategies. This analysis identified 28 features and characteristics. We coded each teaching strategy using a *minus* to indicate that a characteristic was not a feature of a teaching method, a *plus/minus* to indicate that a characteristic was an implicit feature of a teaching method, and a *plus* to indicate that the characteristic was an explicit feature of a teaching method. Two of the authors coded the teaching methods independently to establish inter-coder agreement which was 92%. Disagreements were resolved through discussions until there was 100% agreement. The codes for the six naturalistic teaching methods are shown in Table 2.

All six naturalistic teaching strategies share *explicit* features: The use of everyday home activities as contexts for child learning, sensitivity to a child's attempts to communicate, following a child's lead, adult contingent social responsiveness to maintain child initiations and communicative behavior, and adult model-

ing of desired behavior to elicit elaborations in child communicative competence. Several other characteristics are either *implicit* or *explicit* features of the six strategies: Using situationally interesting activities or events to promote child engagement, providing a child multiple within activity setting learning opportunities, waiting for a child to initiate interactions before responding to communicative attempts, demonstrating positive warmth toward a child during adult-child interactions, imitating a child's behavior, and using expansions, extensions, questions, and prompts to produce child behavior elaborations.

Several characteristics are found in only a subset of the naturalistic teaching methods. In particular, half of the teaching methods target specific communication or language behavior as the focus of interventions, while the other half target classes of pivotal behavior. Although all of the teaching methods implicitly or explicitly include sensitivity to a child's communicative attempts, following a child's lead, and contingent social responsiveness as instructional strategies, only half of the strategies include explicit attention to interpreting a child's behavior as an intent to initiate interactions and the match between a child's behavior and the pace, intensity, and tone of an adult's response.

Several characteristics are found in only a few teaching methods. These include using child strengths and existing capabilities as the building blocks for promoting communicative competence, attending explicitly to across activity setting learning opportunities, using new or novel activities to promote child engagement, and arranging the environment to promote the elaboration of a child's behavior. Only one procedure explicitly uses a child's personal interests to elicit communicative behavior

Table 2. Characteristics of the Six Selected naturalistic Language Intervention Strategies

Characteristics	Enhanced Milieu Teaching (Kaiser & Hester, 1996)	Incidental Teaching (Hart & Risley, 1978, 1982) McGee et al., 1986)	It Takes Two to Talk (Girolametto & Weitzman, 2006)	Responsive Parenting (Landry et al., 2006)	Responsive Teaching (Mahoney & McDonald, 2007)	Responsive Teaching (Raab & Dunst, 2009)
Child Characteristics						
Strength-based Practices	−	−	±	+	−	+
Child Interest-based Learning						
Personal interest	±	−	−	−	−	+
Situational interests	+	+	+	±	+	+
Child-Behavior Outcomes						
Target behavioural Responses	+	+	+	−	−	−
Classes of Pivotal Behavior	+	−	−	+	+	+
Setting Characteristics						
Everyday Activity Settings						
Home	+	+	+	+	+	+
Community	−	+	±	±	±	+
Classroom	±	+	−	−	−	+
Multiple Learning Opportunities						
Within activities	+	+	+	±	+	+
Across activities	−	±	±	+	+	+
Adult Characteristics						
Child Engagement						
Environmental Arrangement	+	+	±	−	−	+
Introducing new activities	−	−	+	+	−	±
Caregiver Responsiveness						
Sensitivity to child attempts to comm.	+	+	+	+	+	+
Responding to intents to comm.	−	−	−	+	+	+
Following a child's lead	+	+	+	+	+	+
Waiting for a child to respond	+	+	+	±	+	+
Contingent social responsiveness	+	+	+	+	+	+
Behavior response match:						
Child abilities	+	−	−	+	+	+
Pace of adult response	−	−	−	+	+	+
Adult intensity/tone of response	−	−	−	+	+	+
Positive Adult Affect						
Positive warmth	+	+	±	+	+	+
Animated expression	±	−	+	±	+	±
Child-like/playful	±	−	±	±	+	±
Joint Interaction						
Turn taking/joint attention	+	−	+	+	+	+
Descriptive comments/praise	+	−	+	+	+	+
Imitation	+	+	+	±	+	+
Child Behavior Elaboration						
Modelling	+	+	+	+	+	+
Expansions/extensions	+	±	+	±	+	+
Asking questions	+	+	+	+	−	+
Prompts	+	+	+	+	−	+
Choices	−	−	−	−	+	+
Environmental arrangements	−	−	−	−	+	+

(Raab & Dunst, 2009). Personal interests are a child's individual likes, preferences, favorites, strengths, etc. that are sources of developmentally instigating behavior. This type of interest-based practice has been found to have positive effects on child development in general and on language development in particular (Dunst, Masiello, & Trivette, in press; Dunst, Trivette, & Cutspec, 2007; Raab & Dunst, 2007). Only two teaching methods use child choice as a strategy for producing child behavior elaborations (Mahoney & MacDonald, 2007; Raab & Dunst, 2009). Providing a child with choices is an elaboration method that has been found to be related to improved communication and language competence (e.g., Carter, 2001; Dunlap, DePerczel, Clarke, Wilson, Wright, White, & Gomez, 1994; Passaretti, 1999).

■ SOME KEY CHARACTERISTICS OF THE PRACTICES

A few studies have compared the effectiveness of different naturalistic teaching methods (e.g., Haring, Neetz, Lovinger, Peck, & Semmel, 1987; Schwartz, 1987; Yoder & Warren, 2002; Yoder, Kaiser, Goldstein, Alpert, Mousetis, Kaczmarek, & Fischer, 1995) or have assessed the consequences of different elements of the instructional practices on child outcomes (e.g., Heimann, Laberg, & Nordoen, 2006; Kim & Mahoney, 2004). Other studies have attempted to isolate which characteristics matter most in terms of explaining variations in child outcomes. The results of these studies have highlighted the importance of particular characteristics of naturalistic teaching. For example, children's personal interests have been increasingly recognized as important for influencing the competence of children with and without disabilities or delays (e.g., Boyd, Conroy, Mancil, Nakao, & Alter, 2007; Vismara & Lyons, 2007).

The manner in which everyday activities are used as contexts for child learning matters as well. Whereas using everyday activities as sources of naturally occurring learning opportunities has been found to have positive behavioral consequences, implementing interventions in everyday activities has little or no positive effects and in some cases has negative consequences (Dunst, Bruder, Trivette, & Hamby, 2006; Dunst, Trivette, Hamby, & Bruder, 2006). Using meal times as an opportunity to encourage and promote a child's use of request gestures is an example of the former (Namy, Acrededolo, & Goodwyn, 2000), and using meal times as an activity to embed instruction is an example of the latter (e.g., Woods, Kashinath, & Goldstein, 2004).

A number of adult characteristics stand out as particularly important, including sensitivity to a child's attempts to interact with people or materials, contingent social responsiveness in amounts proportional to a child's behavior, and joint attention and turn taking (Fletcher, Perez, Hooper, & Claussen, 2005). This is not to say that other adult behaviors are not important. Rather, the former set of characteristics have, as Nievar and Becker (2008) point out, privileged importance. The other adult behaviors that are the characteristics of naturalistic teaching have been found to have value-added benefits. For example, Dunst, Gorman, and Hamby (2010) recently found, in a meta-analysis of contingent social responsiveness to infant vocaliza-

tions, that positive adult affect manifested while reinforcing infant vocalizations increased the effectiveness of verbal and vocal reinforcement.

■ RELATIONSHIP TO EFFECTIVE PARENTING

Many of the characteristics of naturalistic teaching are the same or very similar to parenting behaviors that have been found to be associated with variations in child competence. These include interpreting a child's behavior as an intent to communicate (Zeedyk, 1997), following a child's lead and especially attending to a child's interests (Leibham, Alexander, Johnson, Neitzel, & Reis-Henrie, 2005), taking advantage of teachable moments as part of everyday activities (Rojo, 2001), sensitivity to child behavior cues (Paavola, Kemppinen, Kumpulainen, Moilanen, & Ebeling, 2006), social responsiveness to child behavior (Dunst, Lowe, & Bartholomew, 1990), joint attention and reciprocal parent-child interactions (Slaughter & McConnell, 2003), positive affect during these interactions (Martin, Clements, & Crnic, 2002), and scaffolding as a means to produce elaborations in child behavior (MacDonald, 1998).

Naturalistic teaching differs from the responsive and supportive parenting interactive style in one discernable way. Whereas naturalistic teaching is systematically used to affect changes in a child's communication and language competence (e.g., Kaiser, Hancock, & Hester, 1998), a responsive and supportive parenting style often has quite different determinants (e.g., Dunst & Trivette, 1988; Fox, 1989). However, in those cases where parents may not be proficient in using any of the behaviors constituting a responsive and supportive interactional style, research shows that many of the behaviors are easily facilitated using rather simple and straight forward intervention procedures (Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003; Black & Teti, 1997; Dunst & Kassow, 2007).

■ CENTER FOR EVERYDAY CHILD LANGUAGE LEARNING

The fact that research on naturalistic teaching and on parent-child interactions has found essentially the same characteristics associated with positive child outcomes highlights which characteristics are most important for promoting child competence in the context of naturally occurring everyday activities. The blending of knowledge from both naturalistic teaching and parenting research is a main focus of the *Center for Everyday Child Language Learning* (www.cecll.org) at the Orelena Hawks Puckett Institute. Center staff work with practitioners in early intervention programs to promote their understanding and use of everyday naturalistic language intervention practices, who in turn promote parents' use of the practices with their children. The practices are being used with infants and toddlers who have established impairments (i.e., identified conditions, developmental disabilities, language delays and impairments) and those who present with biological and/or environmental risk for delays.

The Center model is shown in Figure 1. It includes four components: Interest-based child communication and language learning, the use of everyday activities as the contexts of that
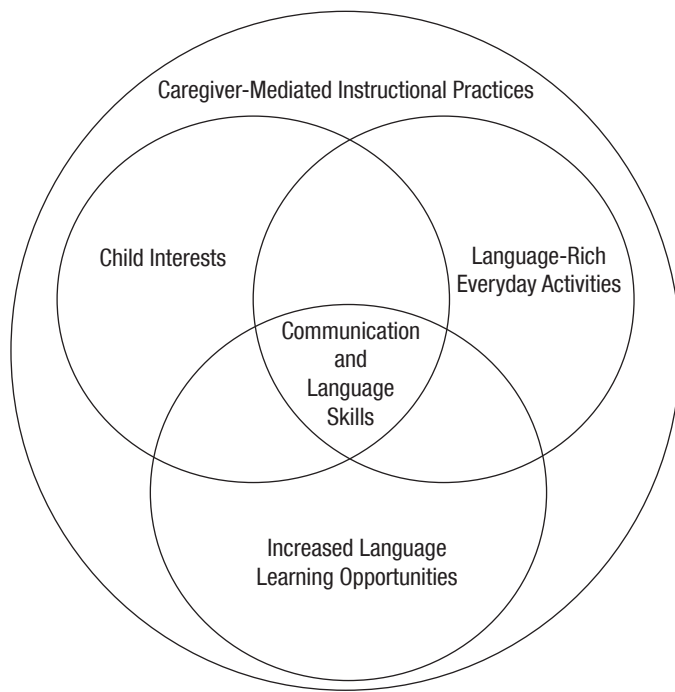
Figure 1. Center for Everyday Child Language Learning communication and language intervention model.

learning, procedures for increasing child participation in the activities, and the use of parent-mediated responsive teaching for supporting and strengthening child communication and language competence (Dunst, Trivette, Raab, & Masiello, 2008a, 2008b). The approach to early communication and language intervention used at the Center places primary emphasis on supporting and strengthening practitioners' and parents' abilities: (1) to increase child participation in interest-based everyday family and community activities and (2) interact with and respond to a child in ways that encourage and promote child communication and language competence. Research using the model has shown that it positively affects parents' sense of their confidence and competence (Swanson, Raab, & Dunst, in press) and promotes child competence, including communication and language development (Dunst, Bruder, Trivette, Hamby, Raab, & McLean, 2001; Dunst, Masiello, & Trivette, in press; Roper & Gurley, 2006; Trivette, Dunst, & Masiello, 2009).

◼ SUMMARY AND CONCLUSION

A content analysis of six naturalistic teaching strategies resulted in the identification of the key features and characteristics of these practices. The procedure used to isolate the teaching strategies identified some features and characteristics that were common to all strategies and others that were method-specific. Those characteristics that stood out as especially important included children's personal interests as a factor promoting engagement in interactions with others, the kinds of everyday naturally occurring activities that are contexts for child initiations, adult sensitivity and contingent social responsiveness to child initiations, and join attention and turn taking as contexts for supporting and strengthening adult-child communicative exchanges. The analysis also showed that the key features and characteristics of naturalistic teaching strategies are very similar

to the parenting behavior that has been found to be associated with optimal child learning and development.

The extent to which the identified features or characteristics are differentially effective in influencing child communication and language competence awaits comparative study. Current evidence suggests that differential effects could be expected, as least under certain conditions (e.g., Charlop-Christy & Carpenter, 2000; Fey, Warren, Brady, Finestack, Bredin-Oja, Fairchild, Sokol, & Yoder, 2006; Yoder & Warren, 2002). Notwithstanding the need for these types of investigations, practitioners and clinicians have at their disposal a number of naturalistic teaching methods that can be used to promote child communication and language competence as part of everyday activity and routines. These include, but are not limited to, the six strategies examined in this paper (see e.g., Peterson, 2005; Warren & Kaiser, 1986).

The use of any particular naturalistic teaching strategy is best understood in the context of a conceptual or theoretical model that includes operationally defined and integrated components. We briefly described one model that has been developed, revised, and refined based on the authors' own research and practice as well as that of others. Models like the one we described provide the kind of structure and guidance for ensuring the practices and key characteristics of the practices are used as part of intervening directly with a child or promoting parents' or other caregivers' use of the practices.

In conclusion, our understanding of what is most important for effective naturalistic teaching is becoming increasingly clear. This paper highlighted characteristics that are considered essential and others that are likely to have value-added effects.

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