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Beyond the eyes

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*The application of dynamic assessment in people communicating at a prelinguistic level:
A descriptive review of the literature*

ABSTRACT

Many people with severe disabilities face difficulties communicating with their communication partners and rely primarily on prelinguistic communication. It is accepted that dynamic assessment can play an important role in improving communication and in measuring a person's ability to learn new communicative skills. Less is known, however, about the application of dynamic assessment in the case of those who communicate at a prelinguistic level. The present article reviewed dynamic assessment procedures that addressed communication abilities in people communicating at a prelinguistic level and young children who communicate using speech, with the aim of identifying key elements of dynamic assessment for persons communicating at a prelinguistic level. The results indicated the need for the identification of contextual variables that support communicative competence, teaching communication partners new skills, and a procedure that is highly individualised. Further research on the validity and reliability of these dynamic assessments is strongly recommended.

2.1 INTRODUCTION

Over the last two decades, dynamic assessment has increasingly been in the spotlight as an important method for assessing an individual's potential for learning. Generally defined as "an interactive, test – intervene – retest model of psychological and psychoeducational assessment" (Haywood & Lidz, 2007, p. ix), dynamic assessment links assessment with intervention, and is viewed as an approach that enables examiners to move beyond merely testing current levels of performance. The great value of dynamic assessment lies in the fact that it has some capacity to reveal barriers to better learning and performance, the kind of assistance required to improve performance, the response to intervention, and the investment required to promote long-term gains in performance (Haywood & Lidz, 2007, p. 12-14).

The origin of many dynamic assessment procedures is to be found in the theory of the psychologists Vygotsky (1896–1934) and Feuerstein (1921–). Vygotsky is well known for his concept of the "Zone of Proximal Development" (Vygotsky, 1978, p. 86), which is described as the difference between the actual level of development (what a child can do without help) and the potential level of development (what a child can do with the assistance of a more capable person). It indicates the state of a child's mental development, producing a more comprehensive understanding of the functioning of the child, which is insufficiently represented by the zone of actual development. Feuerstein emphasised the quality of the interaction between the child and the environment, and developed the theory of Mediated Learning Experience (Feuerstein, Rand, & Hoffman, 1979; Feuerstein, Rand, Hoffman, & Miller, 1980). This concept is defined as a process in which adults interpose themselves between a set of stimuli and the child and modify the stimuli for the child. In the literature on dynamic assessment, different perspectives are discernible: determining the amount of change demonstrated by a person on a given task in response to intervention (Babad & Budoff, 1974; Budoff & Corman, 1976; Peña, Quinn, & Iglesias, 1992), determining the amount of mediation needed to bring the person to some specified level of competence (Campioni & Brown, 1987; Campione, Brown, Ferrara, & Bryant, 1984; Ferrara, Brown, & Campione, 1986; Resing, 1993; Resing, 2000), determining the extent to which children benefit from assistance (Hessels & Hamers, 1993; Hessels, 2000), and the identification of inhibiting factors in learning and processes or means that enable the individual to learn a new task and determination of promising interventions (Bosma & Resing, 2006; Feuerstein, Miller, Rand, & Jensen, 1981; Feuerstein et al., 1979).

Dynamic assessment procedures have been applied to different clinical and educational groups, such as children with learning problems, people with intellectual disabilities and children belonging to minority groups, providing important information concerning an individual's potential for learning (Haywood & Lidz, 2007; Lidz & Elliott, 2000; Tzuriel, 2000). Many of these applications can be regarded as an extension of conventional intelligence tests (Fernández-Ballesteros & Calero, 2000; Hamers, Sijtsma, & Ruijsenaars, 1993; Tiekstra, Hessels, & Minnaert, 2009; Schlatter & Büchel,

2000; Resing, 2000; Van der Aalsvoort, Resing, & Ruijsenaars, 2002). Moreover, the construct of dynamic assessment is also increasingly being applied to oral language assessment (Hasson & Joffe, 2007; Hasson & Botting, 2010; Lantolf & Poehner, 2011; Peña, 1996; Peña et al., 2006; Peña, Iglesias, & Lidz, 2001; Olswang, Bain, & Johnson, 1992). Nevertheless, little is known about dynamic assessment procedures for people who depend heavily on prelinguistic communication due to severe disabilities.

People who function at a prelinguistic stage of language production rely on gestures, vocalisations and eye-gaze as their primary means of communication (Brady, Steeples, & Fleming, 2005; Franco, 2008; Warren et al., 2006). Examples include requests for help by taking an adult by the hand, pointing or looking at objects that are of interest, or rejecting an activity by making sounds and pushing the adult away. Because limited communicative development also influences social-emotional and cognitive development (Rødbroe & Souriau, 1999), it is of utmost importance to address this with respect to people who communicate at a prelinguistic level. A dynamic assessment procedure that addresses communication in such people with severe disabilities may significantly assist in optimising their communication abilities. Such a procedure might reveal the factors hindering these individuals from improving their communicative skills and the assistance required to improve their communication abilities. Furthermore, such a procedure can provide insights into a person's potential to learn new communicative skills and give them the opportunity to reach their potential in this area.

One group of people who rely heavily on prelinguistic communication are people with congenital deafblindness. Because of their severe visual and auditory disabilities they experience complex problems in communicating (Bruce, 2005; Rødbroe & Janssen, 2006). Our long-term goal is to develop an adequate dynamic assessment procedure that addresses communication in such cases. We presume the need for a different approach to that of the dynamic assessment procedures developed for children who communicate using speech. This is not only because the former do not use oral language to communicate, but also because the use of prelinguistic communicative behaviour poses a real challenge to examiners wishing to develop a shared understanding with the participants (Downing, 1993; Iacono, Carter, & Hook, 1998; Grove, Bunning, Porter, & Olsson, 1999; Porter, Ouvry, Morgan, & Downs, 2001). However, the literature is unclear about whether dynamic assessment procedures aimed at people who rely on prelinguistic communication should take a different approach to those procedures which assess people who communicate using speech.

As a state of the art overview of dynamic assessment for people with severe disabilities who communicate at a prelinguistic level was lacking, we undertook a review of the different dynamic assessment procedures that address communication abilities in people who function at such a level, as well as dynamic assessment procedures that address communication abilities in young children who are able to communicate by speech. The differences between the procedures will be discussed, with the aim of discerning the key elements for dynamic assessment that address communication in people who do not (yet) communicate using a linguistic system.

2.2 METHOD

2.2.1 Data collection process

Multiple sources were consulted to conduct a comprehensive review of the literature on dynamic assessment procedures that address communication abilities in persons communicating at a prelinguistic level and in young children communicating by speech. Firstly, the electronic databases Academic Search Premier, Communication and Mass Media Complete, the Cumulative Index of Nursing and Allied Health Literatures (CINAHL), Education Resources Information Center (ERIC), Linguistics and Language Behavior Abstracts (LLBA), MEDLINE and PsycINFO were systematically searched for relevant publications up to and including 31 October 2011. The following combination of search terms was used: "Dynamic Assessment" AND "Communicat*" OR "Language" (the asterisk is a truncation symbol which means that all words starting with "communicat" are included in the search). These search terms were applied to whole texts, except in the LLBA which only searches the abstract, title and subject headings. An additional search for studies at a national level was done on scholar.google.nl, using the Dutch phrase "Dynamisch assessment". Moreover, a double check for references was made by inspecting the reference lists of the articles and book chapters that met the inclusion criteria and by consulting the dynamic assessment database of the Peabody Library at Vanderbilt University.

2.2.2 Inclusion criteria

Articles and book chapters included in this review met the following criteria: (a) they provided a description of a dynamic assessment procedure which included the assessment of skills needed in communication; (b) the dynamic assessment procedure included people who communicate at a prelinguistic level due to severe disabilities, or young children aged 1 to 5 who were able to communicate by speech; and (c) the publication was scientific (publications in peer-reviewed journals and book chapters which refer to other research). The age range of 1 to 5 was chosen because it is during these years that children learn to use speech and discover different aspects of language.

The search in the electronic databases generated 210 hits. The publications were selected from the databases by means of the above selection criteria, which resulted in 29 remaining studies. Most of the publications that were excluded dealt with dynamic assessment procedures that focused on aspects of communication in older children, such as second-language learning, or dynamic assessment procedures that addressed potential in domains other than communication. The remaining studies that were excluded focused on dynamic assessment without mentioning a particular procedure, or only encompassed implications for the use of dynamic assessment in the discussion section. The search on scholar.google.com for Dutch studies resulted in four hits, of which one book chapter met the criteria. The reference lists of the 30 relevant studies provided two additional studies. The dynamic assessment database of the Peabody Library at the Vanderbilt University did not yield additional studies.

2.3 RESULTS

After applying the above-mentioned criteria, 32 studies were selected for this review: six studies included dynamic assessment procedures for people who functioned at a prelinguistic level of communication, and 26 studies included dynamic assessment procedures for young children who communicated using speech. The search resulted in six procedures concentrating on people who functioned at a prelinguistic level of communication (see Table 1) and 17 different procedures concentrating on young children communicating by speech (see Table 2), as some studies examined the same dynamic assessment procedure. Tables 1 and 2 present an overview of the procedures selected, listing (1) the participants, (2) the target abilities, (3) the organisation of the dynamic assessment, (4) the teaching technique used to teach a participant a new skill, and (5) the general purpose of the assessment. Below we describe our main findings in detail.

2.3.1 Dynamic assessment of people who rely on prelinguistic communication

The six dynamic assessment procedures developed for people who rely on prelinguistic communication focused on several skills needed for communication. Two procedures focused on one specific target skill: the production of two-term utterances and eliciting a distal gesture. The other four procedures aimed at improving the production of signals and symbols directed to a communication partner and improving the interaction and communication between the two people involved. They did not restrict themselves to one predetermined signal or skill. One of these procedures explored the use of Augmentative and Alternative Communication (AAC) techniques for this purpose, while the other three explored a broad range of communicative behaviours in the person to investigate the needs. Rather than oral language, the main focus in all procedures was on unaided and aided Augmentative and Alternative Communication (AAC). Unaided AAC consists of efforts to promote signs, gestures and vocal behaviours, while aided AAC refers to communication options and supports external to the user, such as the use of pictures and objects of reference (Ogletree & Pierce, 2010).

The procedures made different attempts to identify the zone of proximal development. In most procedures ($n = 4$), the zone of proximal development was identified by exploring factors that supported communication in the person. These procedures also assessed the amount of change demonstrated by the person in response to the support given. The other two procedures assessed the person's readiness to learn a specific skill by determining the number of prompts needed to elicit a desired response. In these procedures the person was provided with a hierarchy of predetermined prompts designed to vary in the level of contextual support provided, moving from least to most prompts. For example, the least level of prompting was called "spontaneous", which meant that the subject performed the target skill independently, and the highest level of prompting entailed physical guidance, providing hand-over-hand assistance to

help the person produce the targeted skill (McLaughlin & Cascella, 2008). If needed, the person was prompted until the correct response was given, or, if no correct response was given, until the last level of prompting was reached. One of the procedures that explored the supporting factors also included a prompting hierarchy. However, the function of the hierarchy was not to determine the amount of instruction needed to elicit the target item but to provide communication partners with prompts that would most probably elicit a response from the person.

Most of the procedures examined were individually based rather than standardised, with only one being applied in standard fashion, the content being exactly the same for each participant. The other five procedures were highly adapted to the individual situation, with four of these not only being adapted in terms of the target items, the activities and the interactions, but also in terms of the target abilities and the mediation used. One of these latter procedures included group activities that were the same for each participant in addition to child-specific activities. This was also the case for the target items in this procedure: some were identical for each child, some were child-specific.

Collaboration between the examiner and communication partners occurred in the majority of the procedures ($n = 5$). These procedures used interactions with familiar communication partners set in the participant's natural environment. Four of these procedures included interviews with the parents, teachers, practitioners or other adults familiar to the participant, designed to obtain an overview of the communicative skills and the contextual support given, and contexts were created for shared decision and the sharing of findings. Three of these studies emphasised the importance of assessing the influence of the context (partner and environmental factors) and changing partner behaviours to increase the communicative competence of the person.

Table 1 Dynamic assessment procedures ($n = 6$) on communication for people communicating at a prelinguistic level

Study	Participants	Target abilities	Organisation of the assessment	Teaching technique	General purpose
Kublin, Wetherby, Crais, & Prizant (1998)	Children at preintentional or presymbolic levels, with case studies of a 3-year-old boy diagnosed with autism, a 2-year-old boy with pervasive developmental disorder and a 3.5-year-old boy with general developmental delay.	A broad range of communication skills are targeted (e.g., communicating wants and needs, directing attention to an object, production of two-word utterances, and clarify intentions when not being understood).	<i>Pretest</i> Use of interview with familiar communication partners (e.g., parents, teacher) and observation of natural interactions of the child with their familiar communication partners to obtain an overview of communicative skills and contextual support. The readability of the child's signals is considered, observing: the use of direct eye-gaze and facial expression to regulate interaction and indicate emotional state, communicating wants and needs, drawing attention to self, directing attention to an object or event, the repertoire and quality of gestures and vocalisations, initiating and responding to communication, repeating or modifying a communicative signal to clarify intentions when not understood, and symbolisation. How the readability of the child's signals is influenced by contextual variables is considered, observing: Opportunities for communicating (opportunities for the child to communicate for a variety of reasons, such as adequate arrangements and accessibility of materials, a balanced environment that encourages the child to initiate and respond to social cues and undertake developmentally appropriate activities). Structuring of the activity (exchangeable cooperative roles, clearly marked turns, predictable sequence of steps). Interaction style of the partner (allowing the child to initiate, responsive to the child's attempts). Use of scaffolding to support or guide the child's behaviour (use of facial expressions, intonation and gestures, imitation, interpreting the child's emotional state or intention, expanding on the child's behaviour or modelling a better behaviour, giving verbal directions, asking a question, offering help). Hypotheses were formulated about how the variables influence the child's readability to signal. <i>Teaching within test</i> The hypotheses were tested by systematically engineering the environment to provide different kinds of contextual support. The response of the child to the contextual support was observed. A standardised assessment instrument might also be used to achieve this goal. One of the examples used the Communication and Symbolic Behavior Scales (CSBS, Wetherby & Prizant, 1993).	The provision of different kinds of contextual support during activities with familiar partners or an examiner.	Exploration of contextual variables that support the child's communication and influence interaction, providing critical information for the design of the environment of the child to enhance language, interaction and communication.

McLaughlin & Cascella (2008)	Students with moderate to severe intellectual disability, aged 8;11-13;0 years.	Eliciting a distal gesture (e.g., pointing).	<i>Pretest</i> Administration of the Developmental Profile Behavior Sample of the Communication and Symbolic Behavior Scales (CSBS, Wetherby & Prizant, 2002) to verify that the participant did not use distal gestures. <i>Teaching within test</i> Each participant was individually engaged in four play-based structured sampling communication temptations, adapted from McLean et al. (1991) during three 30-45 minute sessions, spaced 2-3 days apart. The sampling events were used to provide several communication functions to teach the distal gesture. For example, an activated wind-up toy that was placed beyond the child's reach. A least-to-most prompting hierarchy was used to assist the participant in producing a distal gesture. Each session included observation to determine whether the participant used the distal gesture independently and to discern the prompt level and communication temptations that elicited the behaviour.	<i>Prompting hierarchy</i> 1. Spontaneous. 2. Adult verbally describes the targeted skill. 3. Adult verbally directs the participant to use the targeted skill. 4. Adult produces the targeted skill as a model. 5. Adult provides a light touch on the arm encouraging the participant to perform the targeted skill. 6. Adult provides hand-over-hand assistance to help the participant produce the targeted skill.	Assess the potential of the participant to elicit a distal gesture by determining the amount of instruction the participant needs to elicit a distal gesture, and providing information about the assistance needed to perform a distal gesture.
McNaughton (1991)	A boy with acquired aphasia and convulsive disorder, aged 7 years.	Understanding and using an Augmentative and Alternative Communication technique (AAC, e.g., sign language, gestures, communication boards using pictures).	<i>Pretest</i> Interviewing the parents and teacher to identify existing communicative skills and outstanding communication needs. <i>Teaching within test</i> Communicative temptations (not specified) with the use of several AAC techniques. One looked for evidence of the ability to understand and to make use of a certain AAC technique.	Communicative temptations (not specified).	Identification of an AAC technique as a means to improve the boy's comprehension so as to permit consistent understanding of one-step instructions in familiar contexts and to provide the boy with a means to request objects and activities and convey basic information.

Study	Participants	Target abilities	Organisation of the assessment	Teaching technique	General purpose
Nigam (2001)	Aimed at children with autism with little or no functional speech (the procedure is discussed but not evaluated).	Production of early two-term semantic relationships with graphic symbols.	<i>Teaching within test</i> The clinician elicits the production of six categories of two-term graphic symbol combinations (e.g., action-object, rejection) during interactions with the child. For each category there were four target items and two generalisation items. Routine activities, sabotage strategies, scripts, real objects and toys may be used to elicit a response to the target items. The skills are assessed in an interactive, meaningful context.	<i>Prompting hierarchy</i> 1. Verbal open-ended questions (e.g., "What do you want?", "Where is mummy?") or verbal demands (e.g., "Tell me", "Point to the symbol"). 2. Partial modelling ("Point to the first symbol"). 3. Complete modelling ("Point to the first and second symbols"). 4. Physical guidance in pointing to the graphic symbol combination.	Assess the child's potential to learn graphic symbol combinations by determining the amount of instruction needed to elicit the correct answer.
Snell (2002)	People with severe disabilities who communicate nonsymbolically, aged 6, 9 and 40 years.	A broad range of communication skills are targeted (e.g., communicating wants and needs, directing another's attention to an object, repair communication breakdowns).	<i>Pretest</i> Use of interview with familiar communication partners (e.g., parents, teacher) and observation of natural interactions of the child with their familiar communication partners to gather information pertinent to learner skills, partner abilities and environmental factors. A coding list is included for the observation of the learner's forms and functions, if the learner is prompted, the communicative acts, the discourse function, and evidence of intentionality. Hypotheses were formulated about how signalling is influenced by the partner and context by studying the tapes. <i>Teaching within test</i> The hypotheses were tested by selecting routines with high communication potential and structuring the environment and partner engagement in planned ways, providing different kinds of support. The participant's and partner's responses were observed and prompts were used (as needed) to enhance performance. <i>Posttest</i> The participant's responses were observed without mediated assistance to assess learning and generalisation.	<i>Prompting hierarchy</i> 1. Wait 3 to 5 seconds for the learner to initiate communication. 2. Establish joint attention by moving closer, looking at the learner and then pausing. 3. Model an appropriate signal that the learner can make and then pause. 4. Physically prompt the same signal. When necessary the partner is instructed in relation to offering assistance other than the prompts mentioned above (not specified).	Exploration of partner and environmental factors that support the subject's signalling, and assess the ability to learn new communication skills.

Van der Schuit, Van Balkom, Segers, & Verhoeven (2008)	Children with intellectual and multiple disabilities having severe speech and language disabilities, including children who communicate by Augmentative and Alternative Communication (AAC) systems, aged 2-6 years.	A broad range of early language, emergent literacy and communication skills are targeted (e.g., single-word labelling, production of multi-word utterances, phonemic awareness, story comprehension, understanding and use of an AAC technique, turn-taking).	<i>Pretest</i> Initial assessment: The limitations and capabilities of the child were determined by tests, questionnaires and observation (all not specified). Practitioners, parents and professional caregivers were interviewed to assess the possibilities and willingness of all communication partners to support the child. Based on these results, hypotheses about the potential of the child to develop and the behaviours of the communication partners that hindered or supported development were formulated. For each cycle of intervention (9 weeks) the development of the child and the hypotheses were tested: video observation was used to review communicative skills and communication between the child and the communication partner (qualitative and quantitative), the expressive and receptive vocabulary of words used during the cycle were tested (not named) and the Taalstandaard for assessing communication and speech-language development (Slofstra-Bremer, Van der Meulen, & Lutje Spelberg, 2005) was used. Hypotheses and goals were adapted for each new cycle. After 1, 1.5 and 2 years of intervention the following measurements were implemented: The Dutch version of the Reynell Test for Language Comprehension (Van Eldik, Schlichting, Lutje Spelberg, Van der Meulen, & Van der Meulen, 2004), the Revised Schlichting Test for Language Production (Schlichting, Van Eldik, Lutje Spelberg, Van der Meulen, & Van der Meulen, 2003) and Snijders-Oomen Nonverbal Intelligence Test (SON-R 2.5-7, Tellegen, Winkel, Wijnberg-Williams, & Laros, 2005). <i>Teaching</i> A special play and learning environment was created to introduce multimodal language representations and AAC. Activities were organised in 9-week cycles around an experiential core theme (e.g., cooking in the kitchen, having a party) in meaningful contexts over a two year period. Each cycle of activities began with a group excursion or experience organised around the central theme, providing the anchor for the subsequent activities in the cycle and capturing the attention and interests of the children, motivating them to engage in activities and providing them with a shared set of experiences. Parents, teachers and therapists became actively involved in the intervention process. <i>Posttest</i> Apart from the initial assessment, the same measurement instruments were used as during pretesting.	The communication partners are taught to follow the child's lead, prompt specific skills and model the target skills when needed during the daily activities. The types of support for each individual are not specified, but the communication partners are supported and trained on a regular basis.	Exploration of how development can be stimulated and achieved, and assess the ability of the child to further develop communication, language and literacy.
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Table 2 Dynamic assessment procedures ($n = 17$) on communication in young children using speech

Study	Participants	Target abilities	Organisation of the assessment	Teaching technique	General purpose
Expressive word learning					
Burton & Watkins (2007)	African-American children, aged 61-76 months.	Expressive word mapping.	<i>Teaching within test</i> The participant viewed a picture book accompanied by a narrated script, and was exposed to four nonsense words. Each participant was given an opportunity to use the target words once during the reading. If the child responded correctly, the examiner responded affirmatively and repeated the target word. If the child's response was incorrect or if the child did not respond, the examiner responded by providing the target word. Following completion of the narrative, the participants were provided with toys that corresponded to the novel items depicted by the target words in the story. The participants were asked to name the objects using the novel target words. If the participant did not respond correctly a prompting hierarchy was used.	<i>Prompting hierarchy</i> 1. Asking, "Can you tell me what this is?". 2. Providing context by showing a picture of the item and making a statement. 3. Phonic cue, stating "It begins with ... (stating first letter)". 4. Indirect model: "This is a ... (naming the word)".	Assess the expressive word mapping potential of the child by determining the amount of instruction the child needs to give the correct answer.
Gutiérrez-Clellen & Peña (2001)	Bilingual children (Spanish/English), aged 3;7-4;9 years.	Single-word labelling.	<i>Pretest</i> The Expressive One-Word Picture Vocabulary Test-Revised (EOWPVT-R, Gardner, 1990) was used in all the studies incorporating this dynamic assessment procedure. The score was recorded, as well as the child's response to the items. The study by Peña, Quinn & Iglesias (1992) also included a comprehension subset of the Stanford-Binet Intelligence Scale 4th edition (CSSB, Thorndike, Hagen, & Sattler, 1986), while the studies by Gutiérrez-Clellen & Peña (2001), Peña (2000), Peña & Gillam (2000) and Peña, Iglesias, & Lidz (2001) added an adapted version of the Preschool Language Scale (PLS, Zimmerman, Steiner, & Pond, 1978) to the EOWPVT-R and the CSSB.	<i>Mediated Learning Experience (MLE)</i> The introduction started with a discussion of single-word labels in contrast to other ways of referring to objects (e.g., function, description) and with a discussion of the importance of labels. The introduction continued by relating the planned activity to school and home activities. After the introduction, the use of single-word labelling was demonstrated, making use of toy sets organised by themes, with the incorporation of planning strategies and self-regulation to help the children modify their learning. The activity was completed by reviewing the principles of labelling and describing changes observed in the child's ability to label, plan and self-regulate. The content and materials remained constant, the mediator's responses	Differentiate children with a language difference from those with a language disorder by examining the modifiability of the child and test gains, assessing the child's ability to generalise the new strategies taught during the MLE, and providing specific information about areas to target in intervention.
Peña & Gillam (2000)			<i>Teaching phase</i> Mediation took place in two 20-30 minute sessions, 1-2 weeks apart, in which four activities were presented. All activities had the general goal of teaching children about labels. The sessions used themes such as transportation, food, animals and community workers. Materials used during the sessions included books, cards, puzzles and toys. During the sessions the child's modifiability was observed and measured with the Learning Strategies Checklist (LSC, Peña, 1993, based on Lidz, 1991) to rate attention, comparative behaviour, planning, self-regulation, transfer and motivation) and the Modifiability Scale (based on Lidz, 1987, 1991) to rate examiner effort and transfer.		
Peña, Iglesias, & Lidz (2001)					
Peña, Quinn, & Iglesias (1992)					
			<i>Posttest</i> 1-2 weeks after completion of the second session the children were tested again. All studies used the same tests as used in pretesting, except for Peña, Quinn, & Iglesias (1992), where only the EOWPVT-R was used as a posttest.	were individually based on the child's responses and strategies.	
Olswang, Bain, Rosen-dahl, Oblak, & Smith (1986)	Children for whom there were concerns about delayed language acquisition, aged 28 and 34 months.	Single-word labelling.	<i>Pretest</i> The Sequenced Inventory of Communication Development (SICD, Hedrick, Prather & Tobin, 1975) was implemented to identify lexical items which the children comprehended but which had not been produced either at home or at the clinic. Four of these lexical items were chosen to be the target items. <i>Teaching within test</i> During two half-hour sessions, the child was exposed to four novel lexical items and the objects corresponding to the word under three different conditions. The children had three opportunities to produce each lexical item under each condition. Each response was judged as either correct, an attempt or no response.	<i>Differential cueing</i> a. Model only: the adult modelled the single word while the child was either attending to or manipulating the object corresponding to the word. This provided an opportunity for a spontaneous imitation. b. Model + obstacle: the adult manipulated the object so that it was out of reach or somehow obstructed, and then modelled the single words as the child attempted to retrieve the object. This provided an opportunity for object request. c. Model + elicitation: the adult modelled the single word which corresponded to the object the child was attending to or manipulating and immediately elicited a verbal response from the child (e.g., adult says "Ball", "What is this?"). This provided an opportunity for an answer.	Examine the modifiability of each child in his or her production of novel lexical items by assessing their responsiveness to cues, and to reveal which types of cues are better for eliciting the correct response.

Study	Participants	Target abilities	Organisation of the assessment	Teaching technique	General purpose
Expressive word learning					
Weismer, Murray-Branch, & Miller (1993)	Toddlers identified as late talkers, aged 27-28 months.	Single-word labelling.	<p><i>Pretest</i> Each subject was probed for production of four target words to ensure that they were not already using these words. The target words differed for each child.</p> <p><i>Teaching</i> The children received one session of training in the modelling of two target words, and one session of training in modelling and evoked production for two other target words. The modelling session used 8-10 targeted models for each word. The modelling + evoked production session modelled each target word 4-5 times. Five opportunities to produce each target word were then provided. The clinician provided feedback to the child for each attempt, including a repetition of the target.</p> <p><i>Posttest</i> Production and recognition probes were administered twice for each of the target words at the completion of each of the two kinds of training sessions.</p>	<p><i>Differential cueing</i> a. Modelling only: focused repetitions of target words were provided during functional activities, with no verbal response required from the child. However, spontaneous productions on the part of the child were not prohibited or discouraged. b. Modelling + evoked production: involved use of focused models of target words with intermittent opportunities for subjects to spontaneously produce words and receive feedback regarding their correctness.</p>	Assess the subject's ability to learn new lexical items under the two treatment conditions by comparing pre- and posttest results.
Expressive and receptive word learning					
Hwa-Froelich & Matsuo (2005)	Bilingual children (Vietnamese/English), aged 3;6-5;6 years.	Single-word labelling and receptive word learning.	<p><i>Teaching</i> A hiding game was presented and the child was asked in English to find each novel object. Then all objects were presented to the child and the child was asked: "Where is the?". If the child did not respond, the question was repeated once in Vietnamese. When the child selected the incorrect object it was encouraged to think of the object's name. If the child was unable to recall the name, mnemonic cues or sentence completion prompts were given in English. This procedure was repeated twice.</p> <p><i>Posttest</i> The hiding game was presented again. Objects were presented and the child was asked to select the correct toy. Then the child was asked to name the toy. A modifiability measure was completed after the posttest, measuring responsiveness, examiner effort and transfer.</p>	<p><i>Mediated Learning Experience</i> The session started by introducing the activity, stating the goal and purpose. The introduction continued with the clinician relating the planned activity to school and home activities. The children were then encouraged to pay attention to the new names by repeating them several times (a minimum of three times aloud) and to themselves.</p> <p><i>Cites</i> If the child was unable to recall the name of an object, mnemonic cues (e.g., "It rhymes with baby") or sentence completion prompts (e.g., "It is a g...") were given.</p>	Examine the modifiability of each child with respect to his or her understanding and production of novel lexical items by assessing their responsiveness to cues.
Ukrainetz, Harpell, Walsh, & Coyle (2000)	Native American kindergarten children from the Arapahoe and Shoshone tribe (age unknown).	Comprehension and use of categorical names	<p><i>Pretest</i> The expressive and receptive categorisation subtests from Assessing Semantic Skills through Everyday Themes (ASSET, Barret, Zachman, & Huisingsh, 1988) were administered.</p> <p><i>Teaching</i> Mediation took place during two 30-minute sessions. The principle of providing a category name for a collection of items was taught in these sessions. During each session, two activities, such as grouping plastic food items from a toy refrigerator or circling animal pictures on a category board, were completed. During the sessions the child's modifiability was observed and measured with the Learning Strategies Checklist (LSC, Peña, 1993, based on Lidz, 1991) to rate attention, planning, self-regulation, application and motivation, and the Response to Mediation Checklist (based on Lidz, 1987, 1991) to rate responsiveness to intervention, examiner effort and transfer.</p> <p><i>Posttest</i> One to five days after the final mediation session the child was tested again using the same test used in pretesting.</p>	<p><i>Mediated Learning experience</i> The session started with introducing the activity by stating the goal and purpose. The general principle for learning to use categorical names was explained. The examiner then helped the children carry out the intended activity with the principle of affective involvement (a sense of caring and enjoyment). The examiner used four facilitating principles: contingent responsiveness, joint focus on the task, sharing of experiences relating to the task, and psychological differentiation. The examiner followed the three principles of competence: keeping the task challenging but possible, providing praise and encouragement, and giving the child a sense of success. The session ended with a review of the goals of the tasks and comments to the child on changes in their ability to categorise, plan and self-regulate.</p> <p>The content and materials remained constant, the mediator's responses were individually based on the child's responses and strategies.</p>	Differentiate children with a language difference from those with a language disorder by examining the modifiability of the child and test gains.

Study	Participants	Target abilities	Organisation of the assessment	Teaching technique	General purpose
Narrative performance					
Gutiérrez-Clellen, Peña, & Quinn (1995)	Bilingual children (Spanish/English), average age 4;9 years.	Communicating the important features of a narrative episode and the moral of a story.	<p><i>Teaching</i> Children were told a story. The teacher and the clinician facilitated the use of new narrative strategies by applying mediation techniques that allow the children to demonstrate narrative learning ability.</p> <p><i>Posttest</i> Reading the child a different story and asking questions according to the target skill.</p>	<p><i>Mediated Learning Experience</i> Examples of two different Mediated Learning Experiences were given. They included the following components. Mediation of intentionality: the examiner consciously attempted to engage the child in the interaction to change the child's functioning by communicating to the child that there is a purpose to the interaction. Mediation of meaning: the examiner focused the child's attention on the critical features of the interaction and how those features related to the values of their social and cultural group. Mediation of transcendence: the examiner linked concepts and events beyond the immediate task to other similar experiences the child had or may have in the future by relating old and new information.</p>	Assess the child's narrative learning ability demonstrated in the response to mediation techniques.
Phonological acquisition					
Glaspey & MacLeod (2010)	Boy with a severe phonological disorder, aged 3;5 years.	Production of fricatives and affricates.	<p><i>Teaching within test</i> The Glaspey Dynamic Assessment of Phonology (GDAP, Glaspey, 2006) was administered. Target sounds were elicited in the following environments: isolation, words, three-word sentence with the target word occurring at the end, four-word sentence with the target word occurring in the middle, a two-target sentence, and connected speech. If needed, cues and assistance were given in the production of fricatives and affricates.</p>	<p><i>Prompting hierarchy</i> 1. No cues. 2. Placement instructions and verbal modelling. 3. Prolongation or segmentation of the segment within the word. 4. Tactile-visual demonstration.</p>	Monitor change in levels of assistance needed over time to produce target sounds by administering the measure prior to, during and after treatment.
Glaspey & Stoel-Gammon (2005)	Children, including case studies of a girl identified with phonological disorder, aged 3;7 years, and a boy identified with moderate phonological disorder, aged 4 years.	Production of a misarticulated sound in an appropriate manner (stimulability).	<p><i>Teaching within test</i> The Scaffolding Scale of Stimulability (SSS, Glaspey & Stoel-Gammon, 2005, 2007) was administered. It proposes a format using a gradient of stimulability based on a 21-point scale to assess a child's speech productions. Target sounds were elicited in seven environments: isolation, word, carrier phrase, novel phrase, embedded in sentence, two-target sentence and picture sentence. If needed, support was given.</p>	<p><i>Prompting hierarchy</i> 1. Spontaneous or delayed modelling. 2. Verbal instruction about articulatory placement. 3. Verbal instruction plus verbal modelling. 4. Verbal instruction plus verbal modelling and prolongation, segmentation, simultaneous production or tactile cues.</p>	Monitor change in levels of assistance needed over time to produce target sounds by administering the measure prior to, during and after treatment.
Spector (1992)	Children in an English kindergarten who could not read, with a mean age of 5;11 years.	Perceive spoken words as sounds (phonemic awareness).	<p><i>Teaching within test</i> The Yopp-Singer phoneme segmentation test (Yopp, 1988) was administered. The subjects were asked to pronounce, in order, each of the sounds in a word. Each child attempted a maximum of 12 items (the original test included 22 test items). The intent was to select familiar words that included a range of vowel and consonant sounds. Supportive prompts were provided if the child was unable to segment a word correctly.</p>	<p><i>Prompting hierarchy</i> 1. Pronouncing the target word slowly. 2. Asking the child to identify the first sound of the word. 3. Cueing the child with the first sound. 4. Cueing the child with the number of sounds in the word. 5. Modelling segmentation using pennies placed in squares to represent the number of sounds in the word. 6. Modelling segmentation as above, but working hand-over-hand with the child while pronouncing the segments. 7. Repeating prompt six.</p>	Assess the phoneme segmentation potential of the child by determining the amount of instruction the child needs to give the correct answer and to predict future progress in reading.

Study	Participants	Target abilities	Organisation of the assessment	Teaching technique	General purpose
Phonological acquisition					
Tyler (1996)	Toddlers exhibiting normal development of speech and language with an average age of 2 years and toddlers with delayed speech and language development with an average age of 2;9 years.	Production of a misarticulated sound in an appropriate manner (stimulability).	<i>Teaching within test</i> A script was written on the basis of routine events. During a play session of 60 minutes the child was asked to produce target words for toys, objects, actions or pictures in the script. Successive cues were presented to stimulate the child to produce the desired word. All cueing levels were presented, regardless of the type of response or no response at the previous level. The child was given at least two opportunities to respond. The 51-item protocol was scored by making tallies of correct, incorrect and no response at each level of antecedent event. Each response was coded into one of nine categories that represented the kind and accuracy of the response.	<i>Differential cueing</i> 1. A model of the target item and an opportunity to spontaneously repeat it. 2. A question is asked to elicit the target item (e.g., "What does the bee say?"). 3. Requesting the repetition of the target item following auditory, visual and tactile cueing (e.g. "Watch my mouth, make a /z/").	Examine the modifiability of each child with respect to his or her production of sounds by assessing their responsiveness to cues, and to assist in decisions regarding target sounds for an intervention program.
Production of simple utterances					
Bain & Olswang (1995)	Children with specific expressive language impairment (SELI), aged 30-36 months.	Production of two-word utterances.	<i>Teaching within test</i> A clinician systematically manipulated objects and provided verbal prompts and cues to elicit the production of nine categories of two-word utterances. Six items were presented for each category. The presentation of an item began with object manipulation plus a general statement. Failure of the child to respond correctly resulted in the administration of another more explicit verbal cue by the examiner. Additional verbal cues were continued until the child was successful on an item or until the last cue had been administered. The responses per cue level were recorded and judged as either correct or incorrect.	<i>Prompting hierarchy</i> 1. General statement (e.g., "Oh, look at this"). 2. Elicitation statement (e.g., "What is he doing?"). 3. Sentence completion (e.g., "Look, the dog is sitting and ...") [manipulating dog so it is walking]. 4. Indirect model (e.g., "See, the dog is walking; what is he doing?"). 5. Direct model (e.g., "Dog walk"). 6. Direct model plus elicitation question (e.g., "Tell me, dog walk").	Assess the child's readiness for immediate change in language growth by determining the amount of instruction the child needs to produce the two-word utterance, and suggesting teaching strategies likely to be most beneficial in treatment.
Olswang & Bain (1996)					
Olswang, Bain, & Johnson (1992)					
Long & Olswang (1996)					

Wade & Haynes (1989)	Normally developing and language-impaired children, aged 1;6-3;8 years.	The production of utterances, \geq one word.	<i>Teaching within test</i> During two play conditions, one child-directed and one adult-directed, the experimenter used two types of cues in an attempt to elicit specific utterances from the subject. Between presentations of cues, the experimenter used the techniques of parallel talk and self-talk to provide the subject with models of the short, simple utterances. Separate transcripts were made for child-directed and adult-directed play conditions.	<i>Differential cueing</i> a. Elicitation questions (e.g. "What is this?"). b. Elicitation statements (e.g. "Tell me, 'want ball'"). Each type was used in random order a minimum of ten times. Models of short, simple utterances were also provided using the techniques of parallel talk and self-talk.	Examine the modifiability of each child with respect to his or her production of lexical items by assessing their responsiveness to cues.
Receptive vocabulary					
Alony & Kozulin (2007)	Children with Down syndrome, aged 47-96 months.	Comprehension of a spoken word.	<i>Teaching within test</i> The Peabody Picture Vocabulary Test (PPVT-R, Dunn & Dunn, 1981) was administered. The child had to point to the picture that corresponded to the word said by the examiner. Whenever the child failed to pay attention or failed to look at the pictures, or when the examiner felt that the child was attentive to the word and the picture but nevertheless gave a wrong answer, the child received mediation.	<i>Mediation including a prompting hierarchy</i> When the child failed to pay attention or failed to look at the pictures, a focusing technique was used: either non-verbal mediation, gesturing in the direction of the pictures, or by verbal comments. When the child was attentive but gave a wrong answer a verbal mediation hierarchy was used: 1. Giving a general explanation of the word (e.g., "Tracks are signs left by something that was here before", for the word 'track'). 2. Elaborate explanation (e.g., "Have you ever walked on wet sand? Did you notice the marks that were left on the ground where you were walking earlier?"). 3. Concrete demonstration accompanied by explanation (e.g., demonstrating an imprint made by an object on plasticine).	Assess change in the child's receptive language performance in response to mediation and detect conditions that cause modifiability.

Study	Participants	Target abilities	Organisation of the assessment	Teaching technique	General purpose
<i>Receptive vocabulary</i>					
Camilleri & Law (2007)	Normal children and whom there were concerns about speech and language development, aged 3-5 years.	Establish new word-referent matches.	<p><i>Teaching</i> Six items which the child was unable to identify correctly, identified by the British Picture Vocabulary Scale II (BPVS, Dunn, Dunn, Whetton, & Burley, 1997), were selected and targeted during this phase. The child played a game in which picture cards were posted into a letter box. The child was presented with three cards, one of which was the targeted item, and was given the opportunity to adopt problem-solving skills in order to match a new word with a new picture, without specifically focusing the child's attention on the appropriate word-picture match. The child was then prompted to post the three cards into the letter box and asked which card he/she would like to post first, second and third.</p> <p><i>Posttest</i> A delayed vocabulary test was administered. All six target items were presented to the child, who was asked to point to each item named.</p>	<p><i>Prompting hierarchy</i> 1. Contextual mediation: because the three cards presented consisted of two pictures which the child had successfully identified during the BPVS and one that the child had failed to identify, the child was given the possibility to adopt problem-solving skills to identify the targeted word. 2. Context/language mediation: saying "No, that's not the X: that was a hard word; let's try and find the easier ones first". When the two distractors were found, they remained on the table while the examiner asked the child once again to find the target item. 3. Context/language/context mediation: making an explicit link between the word and the referent by giving the same feedback again ("You failed to identify the right card, find the easy cards again"), but then turning the cards face down when the child correctly identified the distractors.</p>	Assess the ability to establish new word-referent matches by determining the amount of instruction the child needs to give the correct answer and by determining the child's responsiveness to given mediation techniques at a later date.

Lin (2010)	Bilingual children (Chinese/English), aged 3-4 years.	Respond to greeting and parting, a simple English request, an English request for information and an English instruction.	<p><i>Teaching within test</i> The child was given seven tasks: greet in response, follow a command to pick up a book and sit down on a chair, follow a command to give the book to another person, respond to a question about liking the book, respond to "repeat after me, 'sit down please'", respond to "sing after me, 'Happy New Year to you'", respond to "Thank you. Bye-bye". Scaffolding was used during the test when needed.</p>	<p><i>Prompting hierarchy</i> 1. Repeating the command to gain attention. 2. Nonverbal cues to alert the child to the context. 3. The use of Chinese (first language) to tap into child's prior knowledge.</p>	Assess the potential of the child to perform the tasks by determining the amount of instruction needed to perform the task well, and to monitor the child's achievements in language use in the context of an intervention program by administering the measure prior to and after intervention.
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Study	Participants	Target abilities	Organisation of the assessment	Teaching technique	General purpose
Donaldson & Olswang (2007)	More able children with autism spectrum disorder and typically developing peers, aged 5;0-6;11 years.	Making a demand or asking a question to acquire information from a peer or adult (e.g. "How are you?", "What's that?", "How do I make this?").	<p><i>Pretest</i> The participant's production of a request for information (RI) without environmental support was observed and sampled during one session.</p> <p><i>Teaching within test</i> During three sessions some aspects of the environment were systematically manipulated in an attempt to support the production of RI. There was access to highly preferred objects/activities during all of the sessions. Prompts were given when there was an opportunity for RI but the participant did not act.</p>	<p><i>Prompting hierarchy</i> 1. Spontaneous, no linguistic prompts. 2. Adult or peer model (e.g., "What are you building?"). 3. Adult indirect prompt (e.g., "You could ask Billy what he is building"). 4. Adult direct prompt (e.g., "Say, 'What are you building Billy?'").</p>	Assess the potential of the child to make a request for information by determining the amount of instruction needed to perform the task well, and identify types of support that appeared to most facilitate an increase in performance, with the aim of making better informed treatment decisions.

Request for information

2.3.2 Dynamic assessment of young children communicating by speech

The dynamic assessment procedures developed for young children who communicate using speech focused on six different target areas: expressive word learning, receptive word learning, narrative performance, phonological acquisition, production of simple utterances, and requests for information. Apart from two procedures which focused on receptive as well as expressive word learning, all of the dynamic assessment procedures aimed to assess one specific skill. In 13 of the 17 procedures, the skills were assessed with a focus on improving vocabulary, namely single-word labelling, understanding the meaning of a word and the pronunciation of a word. Four procedures went further than the single word level, assessing the ability of a child to produce simple utterances which communicated something to another person, the ability to ask a peer or adult for information and the communication of important aspects of narratives.

Different attempts to identify the zone of proximal development were found in the existing dynamic assessment procedures. In nine dynamic assessment procedures the main goal was to assess a child's readiness to learn specific target abilities by determining the number of prompts needed to elicit a desired response. These procedures used a prompting hierarchy. Four dynamic assessment procedures determined the amount of change demonstrated by a child comparing pre- and posttest results, of which two procedures performed the pretest to ensure that the participant was not already able to produce the target item. Four procedures determined the extent to which children benefit from assistance testing only once after the intervention. The teaching techniques used in the last two kinds of procedures consisted of Mediated Learning Experience and differential cueing. The Mediated Learning Experience approach is based on Feuerstein's (1979, 1980) and Lidz's (1987, 1991) principles of mediated learning experience, which included the mediation of meaning (focusing the child's attention on what is important in a given context and helping the child to understand its value), the mediation of transcendence (bridging concepts and events beyond the immediate task and inducting abstract ideas), mediation of competence (manipulating the task or offering encouraging remarks and praise to induce a feeling of competence and mastery), the mediation of achievement (helping the child to determine effective strategies to reach the goal) and mediation of change (communicating to the child that they are learning, and describing the difference between the child's level of performance before and after the interaction). Differential cueing employs two or three cues which are presented to the child to stimulate the production of the target item. In contrast to the prompting hierarchy, the cues are not arranged from least to highest level of prompting, and all of the cues are presented regardless of the type of response at the previous level.

Eight procedures were applied in a standard fashion, while the other nine had a certain component that was individually based. Of three of the latter procedures the content and materials remained constant but the specific interactions during the intervention varied depending on the individual child's responses and strategies. In four procedures the target items were individually based. For one procedure the activities performed and the interactions during the intervention were individually based, while

for another procedure the activities and interactions were partly individually based. The type of mediation offered in each procedure was the same for all participants.

2.4 DISCUSSION

This review study investigated dynamic assessment procedures that address communication abilities in people communicating at a prelinguistic level due to severe disabilities, and in young children (1-5 years) who are able to communicate by speech. Comparing the procedures for the two groups, clear differences can be discerned. We would like to discuss the most essential findings here, indicating the key elements of dynamic assessment procedures for people who use a prelinguistic level of communication.

Firstly, the main focus of the majority of the procedures for people who communicate at a prelinguistic level was to identify contextual variables that support the person's communicative competence. In contrast, the main goal of the procedures for young children communicating by speech was to assess their learning potential. With respect to the former group, it was considered extremely important to examine the impact of the partner on the communicative behaviour of a person, as well as environmental factors such as lighting, sounds and the availability of motivating objects and aided AAC techniques (Kublin, Wetherby, Crais, & Prizant, 1998; McNaughton, 1991; Snell, 2002; Van der Schuit, Van Balkom, Segers, & Verhoeven, 2008). This concern accords with the primary reason cited for the evaluation of children with severe developmental disabilities—to provide suggestions about how to help the child learn (Jepsen, 2000).

A second difference concerns the teaching of new skills. Both the learner and their familiar adult communication partners (e.g., parents, teachers, caregivers and practitioners) were taught new skills during the assessment of people communicating at a prelinguistic level, while only the child was taught new skills in procedures for children who communicate by speech. When supporting factors were identified, the familiar communication partners were taught how to change their behaviour and the environment to enhance the communicative development of the person communicating at a prelinguistic level (Kublin et al., 1998; Snell, 2002; Van der Schuit et al., 2008). The inclusion of familiar communication partners in the assessment is well founded, as it is known that communication with people who function at a prelinguistic level is challenging even for familiar communication partners (Downing, 1993; Grove et al., 1999; Iacono et al., 1998; Porter et al., 2001).

The third difference concerns the level of individualisation of the procedure. The procedures developed for children communicating by speech were standardised or may include one or two components that were adapted to the individual situation (i.e., the target items, activities or interactions). The mediation required to support the child was always determined beforehand. By contrast, the majority of procedures developed for people who communicate at the prelinguistic level included target abilities, target items, activities, interactions and mediation which were all adapted to each participant's communicative level, needs and interests (Kublin et al., 1998; McNaughton,

1991; Snell, 2002; Van der Schuit et al., 2008). An adaptive procedure such as this has a broad reach and is considered necessary if the aim is to meet the needs of the person (Missiuna & Samuels, 1989; Resing, Ruijsenaars, & Bosma, 2002).

We also discovered that the principles of Mediated Learning Experience were not used at all in dynamic assessment procedures for people who communicate at a prelinguistic level, although they were used in procedures for children who communicate by speech. The most likely reason for this is that the vocabulary used by the person and their communication partner is not large enough to use this approach in the assessment.

Dynamic assessment of communication abilities in people who communicate at a prelinguistic level has not been frequently applied, nor has it often been evaluated. However, we were able to derive conclusions about the key elements of dynamic assessment procedures for such people, due to the striking contrasts in the content of the majority of the procedures used for the two groups. Although some form of dynamic assessment has already been applied to people who communicate at a prelinguistic level, there are still many gaps to be filled. The following topics should be considered for future research.

Research could explore the nature and intensity of the intervention required for developing skills assessed. We found no agreement about the type, frequency and length of assistance required to produce positive outcomes in the learner, given that they have such a potential. Therefore, it can be asked whether the behaviour of the partner or elements of the environment really provided the most optimal support, or if the intervention was maintained long enough. Dynamic assessment for this specific target group in particular was thus limited by its heavy reliance on the knowledge and mediational skills of the examiners, so the data gathered relied on a certain degree of subjectivity on the part of the examiner (Elliott, 2003; Haywood & Lidz, 2002; Haywood & Lidz, 2007). The testing of hypotheses concerning supporting factors is still required. However, research on the nature and intensity of intervention to enhance certain communicative skills may provide the examiner with guidelines about possible supportive partner behaviour and environmental elements, and about how long it takes before positive outcomes can be expected. Due to the heterogeneity of the group of prelinguistic communicators, it is recommended that each subgroup be studied separately (e.g., people with autism, people with congenital deafblindness and people with severe intellectual disabilities).

Research could further explore which behaviours should be observed to assess the communicative skills of the individual and their partner and the quality of communication. In line with guidelines about possible interventions, the examiner should be provided with a list of behaviours that should be observed for both the participant and the partner in order to make statements about their communicative skills, the quality of communication and the effect of the intervention on the communicative competence of the individual and their communication partner. Of the four studies which examined more than one skill, only one included a coding list of behaviours that were

observed (Snell, 2002). The other three studies named aspects regarding communication that they found important to observe in the learner or the partner, but did not provide an exact coding list of all behaviours on which the examiner should focus (Kublin et al., 1998, McNaughton, 1991; Van der Schuit et al., 2008). Moreover, no results were available in any of these studies concerning the validity and reliability of the observations. Therefore, in order to guide future assessments, research on a valid and reliable coding list would be of great value.

Further research should also focus on the optimal conditions—for both the learner and their partner—required to assess the learning capacity of the individual. As mentioned above, the main goal of dynamic assessment procedures for these individuals is often to assess factors influencing the communicative skills of the person. Research should further explore what communicative level both the partner and the learner require to optimise the effect of dynamic assessment. For example, matching clients and partners of various levels of communicative competence (high, middle and low), to determine which partner-client pair yields the best results.

2.5 CONCLUSION

In this review we discussed different dynamic assessment procedures that addressed communication abilities in people who use prelinguistic forms of communication due to severe disabilities, and in young children who are able to communicate by speech. A comparison of the dynamic assessment procedures developed for these two different groups revealed three key elements for the application of dynamic assessment in people who communicate at a prelinguistic level. First, identifying contextual variables that support the person's communicative competence was found to be a very important goal in the assessment. Second, we found that these procedures include the teaching of skills to the communication partner in order to enhance the individual's communicative development. This indicates that improving the communicative competence of the partner plays a major role in the ability of these people to learn new communicative skills. Third, assessment procedures for these people should be highly individualised to meet each person's developmental level, needs and interests. The precise content of the dynamic assessment procedure is an area of further investigation, as few studies have been conducted on this topic to date. Nevertheless, dynamic assessment has been shown to play a major role in improving communication between those who communicate at a prelinguistic level and their communication partners, demonstrating the zone of proximal development of these individuals.