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Beyond the eyes

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*The appropriateness of dynamic assessment
in people with congenital deafblindness*

ABSTRACT

Appropriate assessment is essential for the development of people with congenital deafblindness. This article describes the results of a pilot study of a newly developed assessment procedure that addresses communication in a dynamic way. We studied the effectiveness among three children with congenital deafblindness and their three familiar communication partners. Results showed that the procedure facilitated recognition of communicative competences, and supplied communication partners with instructions for intervention during and after the assessment in order to enhance development. The procedure enables the assessment of the ability to increase the number of initiatives taken, symbolize thoughts by signing, learn new signs, make use of hand-under-hand signing, use declarative communication, increase positive emotions, and decrease challenging behaviour. Two of the three children showed remarkable improvements in response to the assessment intervention, demonstrating what they are capable of when partner behaviour is more attuned to their communicative needs. This study may be seen as a promising first step in the area of dynamic assessment in people with congenital deafblindness. Some of the ongoing issues, however, are also discussed.

5.1 INTRODUCTION

Assessment lies at the heart of the development of a person who is congenitally deafblind. Congenital deafblindness refers to a combined visual and hearing impairment present at birth or before language develops, which affects all situations in life (Rødbroe & Janssen, 2006). The process of social interaction is tremendously affected, and people with congenital deafblindness are highly in need of accurate support in order to make developmental progress (Buete, Vohr, & Herer, 2013; Miles & Riggio, 1999; Perez-Pereira & Conti-Ramsden, 1999; Rødbroe & Janssen, 2006; Rødbroe & Souriau, 1999). A fundamental process for intervention is appropriate assessment (Huebner, Prickett, Welch, & Joffe, 1995; Losarda & Syverson, 2011; Rowland, 2009; Vervloed, Van Dijk, Knoors, & Van Dijk, 2006).

The importance of appropriate assessment lies in the fact that assessment results can influence educational decisions about a child for years to come, for better or worse (Rowland, 2009). Accurate, comprehensive, and applicable results, therefore, are essential for the child's educational and personal success. While professionals and researchers working in the field of congenital deafblindness agree upon the importance of appropriate assessment, there are problems involved. First, the severe seeing and hearing disabilities, and the huge difficulties experienced in communication are a challenge for assessment. Measurement instruments often involve language, eye-hand coordination, and reading; they require the person to have the ability to see stimuli, to understand (spoken) language, or a means of responding verbally or physically (Fewell, 1991; Mar, 2010; Rowland, Chen, Stillman, Mar, & Syler, 2009; Rowland, 2009; Wolf-Schein, 1998). Validity of assessments that have these characteristics, however, can be seriously questioned when administered to people with congenital deafblindness; the test scores often mask a person's true skills and competencies (Crook, 1999; Mar, 2010; Rowland, 2009; Wolf-Schein, 1998).

Second, along with the person with congenital deafblindness, his/her communication partners are also in need of appropriate support but are infrequently involved in assessments. Communication with people with congenital deafblindness is challenging (Bruce, 2005; Downing, 1993; Downing, 2005; Rødbroe & Souriau, 1999; Siegel-Causey & Bashinski, 1997; Wasson, Arvidson, & Lloyd, 1997), and communication partners, such as parents, teachers, peers, and caregivers need intervention in order to interact in such a way as to promote development in people with congenital deafblindness (e.g., Amaral, 2003; Bruce, 2005; Chen & Haney, 1995; Downing, 1993; Hart, 2006; Janssen, Riksen-Walraven, & Van Dijk, 2003; Nafstad & Rødbroe, 1999; Nelson, Van Dijk, Oster, & McDonnell, 2009; Rødbroe & Souriau, 1999). Since appropriate intervention is linked with assessment, assessing the skills of the communication partners is therefore seriously recommended in order to improve the quality of communication (Boers, Janssen, Minnaert, & Ruijsenaars, 2013; Downing, 2005; Miles & Riggio, 1999; Wasson et al., 1997). Existing measurement instruments developed for people with deafblindness, however, have a limited focus in terms of the assessment of partner competences (Boers,

Janssen, Minnaert, & Ruijsenaars, submitted).

Third, the translation of assessment results into Individualized Education Programs (IEP) and educational goals is a common problem and a concern that is raised by many professionals working with people with deafblindness (Rowland, 2009). There is a call for assessments that focuses on the evaluation of a person's learning, which will generate a valid picture of a person's strengths as well as their needs, and determine promising interventions (Losardo & Syverson, 2011).

The current study focuses on dynamic assessment as an appropriate approach for assessing children with congenital deafblindness and their communication partners in an attempt to overcome these problems. Dynamic assessment links assessment with intervention and is generally defined in terms of an interactive test – intervene – retest model (Haywood & Lidz, 2007, p. ix). A dynamic assessment approach provides not just information on performance or mastery of skills, but information on the person as a learner as well, and emphasizes the person's strengths (Haywood & Lidz, 2007; Losardo & Syverson, 2011). It is future oriented, and has the capacity to: reveal barriers to better learning and performance; show the kind of assistance required in order to improve performance; reflect the response to intervention; and ascertain the investment required to promote long-term gains in performance (Haywood & Lidz, 2007). Different models of dynamic assessment have been posited, such as 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 (Campione & Brown, 1987; Campione, Brown, Ferrara, & Bryant, 1984; Ferrara, Brown, & Campione, 1986; Resing, 1993, 2000), determining the extent to which children benefit from assistance (Hessels, 2000; Hessels & Hamers, 1993), identifying the inhibiting and facilitating factors in learning, and determining promising interventions (Bosma & Resing, 2006; Feuerstein, Miller, Rand, & Jensen, 1981; Feuerstein, Rand, & Hoffman, 1979). Although the assessment approaches are different, they all highlight the general principle that guided learning can make a valuable contribution to the assessment process (Jitendra & Kameenui, 1993).

The need to assess the potential of a person with congenital deafblindness and to specify the surrounding conditions that may affect development seems obvious. Yet, a dynamic assessment procedure specifically designed for people with congenital deafblindness is still lacking, and the efficacy of dynamic assessment implemented with this group is unknown (Boers et al., 2013). Therefore, a pilot study to research the effectiveness of a dynamic assessment procedure for people with congenital deafblindness is required. Since the complexity of problems experienced in communicating is an enormous risk to the overall development of people with congenital deafblindness (Bruce, 2005; Hart, 2006; Janssen & Rødbroe, 2007; Rødbroe & Janssen, 2006; Rødbroe & Souriau, 1999; Siegel-Causey & Bashinski, 1997), the aim of this research is to examine a new dynamic assessment procedure addressing communication in children with congenital deafblindness. The results of this pilot study are presented here.

5.2 METHOD

5.2.1 Design

The study was conducted as a multiple case study. This was thought to be useful, since no features common to the group were sought; instead, the procedure was aimed at capturing the extent and the nature of individual differences (Barlow, Nock, & Hersen, 2008; Kazdin, 2011; Morgan & Morgan, 2009; Stake, 2006).

5.2.2 Participants

Three children with congenital deafblindness were included in this study. The children were selected on the basis of the criterion that they had dual sensory impairments from birth onwards: two girls, both aged 7 years at the start of the study, and one boy aged 15 years, hereafter referred to as Child L, Child C, and Child P. Child C and Child P are diagnosed with CHARGE syndrome, and Child L with Cornelia de Lange Syndrome. Child L has some residual vision and hearing, Child C has residual vision and is deaf, and Child P has residual vision in one eye and is deaf. None of the children are physically disabled. Informed consent was obtained from the parents of all the participants. For each person a familiar communication partner was chosen, who participated in the assessment as well: the teacher assistant of Child C, the mother of Child L, and the caregiver at the group home of Child P.

5.2.3 Procedure

5.2.3.1 Testing

The dynamic assessment was constructed as a test – intervene – retest design. The pretest assessment included two baseline measurements of each child's and each partner's actual (unassisted) communication abilities, using the Interaction and Communication Analysis List (ICAL) (Boers & Janssen, 2012). The ICAL is a reliable observational measurement instrument – with a mean interobserver reliability of 80.5 percent – that assesses 40 abilities that are important in both people with congenital deafblindness and their communication partners, and which ensures high-quality communication (Boers, Janssen, Minnaert, Damen, & Ruijsenaars, submitted). After the pretests, five teaching sessions, held over six to seven weeks, with one to three weeks between each session, were then conducted, which aimed at improving communication abilities in partners, utilizing a protocol developed for the purpose. After each teaching session, a posttest was performed using the ICAL in order to determine the child's level of performance in response to the intervention. For this research, we examined the categories “topics and maintenance,” “form and symbolization,” “intentional communication,” “affective involvement,” and “regulation of intensity” to measure the communicative behaviours of the child: a) the number of initiatives the child takes vis-à-vis the communication partner or in response to the partner (including exchanging messages by symbols or gestures, emotions, and body movements in

reaction to the partner [e.g., walking to the toilet when the partner says the child has to go to the toilet, tapping the partner's hand when the partner tapped the child's hand, laughing]), b) the symbols they actively express to communicate their thoughts and feelings (total number of symbols expressed, the number of different signs observed [since one sign can be expressed more than once] and the expression of symbols referring to an emotion), c) the communication forms the child use and the presence of hand-under-hand signing, d) their expression of and response to declarative intentions, e) the presence of positive emotions, and f) the presence of challenging behaviour (self-injuring or aggressive behaviour). The theoretical concepts of these communicative aspects are as follows.

Initiatives. Interaction between the child and the partner expand when more initiatives are taken within an interaction (Rødbroe & Janssen, 2006).

Symbolization. The larger the vocabulary of the person with congenital deafblindness and the partner – or the more they are able to symbolize their thoughts and feelings – the more topics that can be communicated about (Miles & Riggio, 1999; Souriau, Rødbroe, & Janssen, 2009).

Communication forms. There are several forms suitable for communication. The most basic forms in communication with persons with congenital deafblindness are gestures (e.g., facial expressions, pointing to an object, giving and reaching, and full body movements that refer to a bodily experience) and vocalizations (Miles & Riggio, 1999). Symbols can be transferred by using objects of reference, pictograms, pictures, drawings (visual or tactile), the hand alphabet, braille, and writing, or by conventional sign language or idiosyncratic signs (which can be signs made in the air or hand-under-hand). These communication forms offer possibilities for extensive communication. In most cases, signing is seen as an appropriate communication form to build a vocabulary (Souriau et al., 2009). Since the tactile sense is of great significance and an indispensable component in interaction with people with congenital deafblindness (Edwards, 2012; Huebner, Prickett, Welch, & Joffe, 1995; Janssen, Nota, Eling, & Ruijsenaars, 2007; Janssen & Rødbroe, 2007; Nafstad & Rødbroe, 1999; Nicholas, 2010, 2012; Rødbroe & Janssen, 2006), special attention is paid to hand-under-hand signing.

Declarative intentions. The two most basic intentional communicative functions are the imperative and declarative functions. The imperative function is defined as using a person as a means to obtain objects or reach other goals (e.g., taking the partner by the hand and bringing him to the door, asking to open the door) (Bates, 1976; Lichtert, 2004). When declarative intentions appear, the person is also able to focus the attention of the other on an object, person, or event, just to share information about it (e.g., talking about the fair you went to yesterday) (Bates, 1976; Camaioni, 1996; Daelman, 2003; Lichtert, 2004).

Positive emotions. The presence of positive emotions – such as feeling happy or joyful, and being positively surprised – has a positive influence on the interactions and the development of the person with congenital deafblindness (Janssen & Rødbroe, 2007;

Trevarthen & Aitken, 2001).

Challenging behaviour. Excitement, frustration, or certain stimuli (i.e., movements, sunlight in the eyes when having residual vision, a new object that is shown to the child) can produce a higher state of intensity. For the interaction, it is positive when the person is able to regulate the higher intensity in an appropriate way, for example, by turning his/her head away. Inappropriate interaction involves self-injurious behaviour or aggressive behaviour towards the communication partner.

5.2.3.2 Intervention protocol

Often it is an examiner who interacts with the child during a dynamic assessment (see e.g., Burton & Watkins, 2006; Gillam, Fargo, Foley, & Olszewski, 2011; Hasson & Botting, 2010; Missiuna & Samuels, 1989; Hessels, 2000; Tzuriel & Caspi, 1992). However, in this procedure, only familiar communication partners interacted with the child, since the inclusion of unfamiliar persons (such as examiners) was a threat to the validity of the assessment. The specificity of the child with congenital deafblindness did require communication partners who suited the communication level of the child best and who were responsive to the child. This adaptive approach, which would never be possible for an average examiner – in addition to the fact that children with congenital deafblindness feel most comfortable with known people – increases the chances of fully showing their capacities (Miles & Riggio, 1999; Van Dijk & Nelson, 2001; Wolf-Schein, 1998).

The pilot was implemented with an overall package of four activities and five behavioural guidelines, based on five pillars: 1) symbolizing the important aspects of an activity (e.g., name of activity, objects, names of people, emotions), 2) use of a tactile approach (i.e., making use of tactile signs [hand-under-hand], co-active moments and touch), 3) implementation of declarative communication by expansion of utterances of the child and talking about a nice thing that was done, 4) affective involvement (i.e., letting the child know that their emotions have been noticed and reflecting the emotion), and, 5) doing enjoyable things together. After finishing the pretests and before the first teaching session started, the first author introduced the communication partners to the assessment activities and guidelines. If necessary, the partners were coached during the teaching sessions (live coaching), or immediately after the teaching session.

The four activities comprised a) the introduction, rehearsing, and challenge of making the (coactive) sign “drinking” during drinking time; b) singing a song or reading a pop-up book, supported by hand-under-hand signing and co-active movements of the body; c) sharing the interest of the child in an object or activity, and becoming part of it; and d) communicating about a nice activity they have done together earlier in the day (declarative communication). For the last two assessment activities, the partner learned the operations needed to share the interest of the child and to retell a shared activity (declarative communication). The actual activity, however, could be different for each session as can be seen in Figure 1, where the assessment procedure for Child L

is given as an example.

Symbolize “drinking.” The partner is asked to sign the symbol “drinking” several times during a drinking moment (rehearsing). The child is urged to make the sign for “drinking” by including a prompting hierarchy. The hierarchy is as follows: (1) the partner makes the sign in the air (if the child has residual vision) and a coactive sign for “drinking,” and points to the cup and/or bottle which is out of reach of the child; (2) the partner signs to the child “you drinking” (in the air and hand-under-hand); (3) the hand of the child, where the sign has to be made, is touched gently; and (4) the fingers of the child are put in the position of the sign “drinking,” and coactively the sign is made. After each step the partner waits, while staying close to the child.

Singing a song or reading a book. Primarily, the partner is teaching a song, performed by using hand-under-hand signing and tactile bodily movements (movements of the partner that are felt by the child, such as the partner’s legs bumping against the legs of the child, making out-sized movements while holding the hands of the child, or blowing). A song is chosen that suits the level of communication of the child. For children who show no interest in singing a song, there is the possibility of reading a pop-up book. The book is read by looking at the book, when there is residual vision, and feeling the pop-ups, and matching hand-under-hand signs to the objects in the book, each time following a similar order to that of the song. During the first teaching session, the child is made familiar with the song or book. From teaching session two onwards the partner is asked to stop the song or book somewhere in the middle.

Sharing interest. The partner also is assigned the task of watching the child and discovering the things the child is interested in, after which the partner has to try to become involved in the interest of the child. This is done by imitating the behaviour of the child and – when the partner has the feeling of being part of the activity – making variations in what to do with the object or the activity. Moreover, during this activity the partner is asked to make use of residual sight and hearing as well as of the tactile sense (that is, touching the child and co-actively making movements and signs with the child about important aspects of the activity).

Retelling of the activity. The partner is asked to start a declarative communication with the child about a nice, interesting activity that they have shared during the day. This is done by expressing the activity by means of gesturing and signing the important aspects, making movements that were also involved in the actual activity, touching the skin of the child where the child was also being touched by the partner or objects during the actual activity, making the same sounds, and expressing the same facial expressions.

In addition to these four activities, the communication partner is also asked to a) symbolize the important parts of an activity (e.g., sign “snack” or “apple” during refreshment time); b) to support the important parts with a tactile sign (hand-under-hand) in addition to the communication form normally used; c) to give positive feedback when the child utters a symbol by him/herself (e.g., laughing within the visual field of the child who has residual vision, giving the child a little pat); d) to react to each

utterance of the child by imitating it and expand this by expressing signs, movements, and touches that are connected to the utterance of the child so that a conversation can come about; and e) to share and reflect emotions (when the child expresses an emotion, the partner has to make the same expressions as the child does [mimic, sounds, movements], touchable for the child, and to express a sign standing for the emotion [e.g., “happy,” “angry,” “sad,” “cozy”]).

The activities of “sharing interest” and “declarative communication,” along with the guidelines are recognized as interactive behaviour needed to obtain high quality communication. They are drawn from information on communication in persons who are congenitally deafblind found in the series of booklets “Communication and Congenital Deafblindness” (Rødbroe & Janssen, 2006; Janssen & Rødbroe, 2007; Souriau, Rødbroe, & Janssen, 2008; Souriau et al., 2009). These booklets were developed based on a developmental psychological framework, and the information provided was mostly derived from clinical experience. The rationale for the activity of “sharing interest” was also derived from The Van Dijk Approach to Assessment, which emphasizes the importance of resonating with the child’s behaviour by following the child’s lead (Nelson et al., 2009). The drinking activity and singing a song/reading a book were devised by the first author as ways to assess the child’s ability to make a new sign, to express symbols, and to take initiatives during a daily situation, in a fun, unstrained way. All activities imply the use of the tactile sense, since a person with congenital deafblindness is strongly dependent on the tactile sense in order to establish interpersonal relationships and experience the world (Nafstad & Rødbroe, 1999; Nicholas, 2010, 2012; Rødbroe & Janssen, 2006).

For all interactions, the visual and auditory disability of the child always needs to be taken into account: The partner is informed about the best distance and position for showing visual and auditory stimuli.

The partner is asked to perform the activities and guidelines not only during the teaching sessions but whenever the partner work with or take care of the child. The communication partners receive all information on paper in the form of a manual.

5.2.3.3 Research terms

One condition for this study was that the communication partner should feature those competencies that will change his or her actions in order to bring forth the ultimate act in the child. The partner had to develop according to his or her communicative behaviours, with the benefit of coaching, or the partner would not be included in this research. This inclusion criterion was fulfilled, since all three partners took advantage of the coaching and changed their actions as requested by the coach.

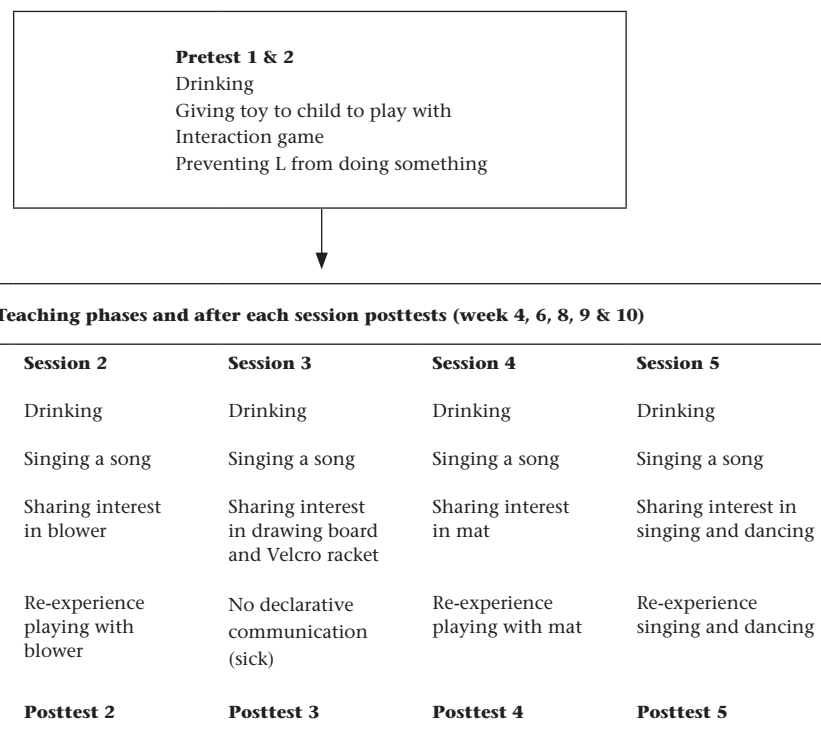


Figure 1 Example of assessment process: Child L

5.2.3.4 Data collection and analysis

All interactions during an afternoon at home were videotaped for Child L; for Child P an afternoon at the group home was videotaped; and for Child C those activities during a school day which had the best chance for interaction were videotaped (i.e., drinking time, grocery shopping, cooking, and the transition from school to group home), in addition to the assessment activities at the beginning of the intervention. The Media Coder (Bos & Steenbeek, 2010) was the computer tool that facilitated the coding of the observations and that calculated the frequencies in the occurrence of behaviours. Since the overall aim of this pilot study was to measure the changeability of the child, the analysis of the differences between pretest and posttest scores were accordingly carried out for each participant. In this study the performance differences between the two phases (pre- and posttest) are indicated by percentage of nonoverlapping data (PND) (Scruggs & Castro, 1987), which is the percentage of posttest data points that exceed the single highest pretest data point (or the single lowest pretest data point in the case of challenging behaviour as you want to reduce challenging behaviour).

5.3 RESULTS

The three case studies will now be discussed in terms of a description of the information that the assessment process revealed about the amount of change demonstrated by the person with congenital deafblindness in response to the intervention. Pretest and posttest scores for all three children are presented in Table 1, as well as the percentage of non-overlapping data (PND). Table 2 summarizes the effect of the dynamic assessment procedure on each child.

5.3.1 Case of Child L

5.3.1.1 Pretest

Few initiatives on the part of the child were seen (28-32) during an afternoon. Child L communicated by means of the most basic forms of gestures (like reaching her arms out to her mother or a cup) and vocalizations. She did not express signs or other symbols. Child L did express imperative intentions, communicating her desire to play together, her desire to have an object, or her need for help (e.g., getting out of the chair). Declarative communication was not seen. Child L showed few positive emotions during the interactions (0-2). Self-injurious behaviour, on the other hand, was often seen: She hit her head 1.6 to 5.4 times per minute, on average, while interacting.

5.3.1.2 Response to intervention

In response to the intervention, the number of initiatives taken by Child L increased drastically (Mean = 83 initiatives per teaching phase). Another revealing result was that Child L was able to produce symbols, expressed by signs in the air and hand-under-hand signs. She signed one to eight times during a session to symbolize her thoughts. Four different signs were expressed during the intervention phase, all of which were new for this girl: Watch, clock, blower, and drinking. Signs for “watch” and “clock” were produced during the song, signaled by the child from the first teaching phase during moments when the song had stopped. “Clock” was signed hand-under-hand; “watch” hand-under-hand and in the air. During a blower activity – which she liked very much – the sign for “blower” was expressed hand-under-hand, during a pause in the activity. During the last session, Child L started to make a sign in the air that looked like “drinking” after step four of the prompting hierarchy. Although the symbols were only observed during the activity itself, her mother said that the child expressed the symbol for “watch” to her grandmother at another time as well. Declarative intentions initiated by the child were not seen during the teaching sessions. However, when her mother communicated about something they had done together that day, the girl paid attention, and she did not hit her head at all. During the interactions at posttesting, there was an increase in positive emotions, up to eight, on average. Another positive effect was a substantial decline in hitting her head during the interactions (Mean = 0.39 bangs/minute).

As can be seen in Table 1, the dramatic increase in initiatives and the increase in positive emotions were not found for teaching sessions three and four. It turned out that Child L was not feeling well during those weeks, which most probably caused these lower results. For this reason no declarative communication was begun in teaching phase three, when the child was too tired. Nevertheless, most categories had a high percentage of non-overlapping data (PND). Only “expression of signs that refer to an emotion” and “expression of declarative intentions” had a PND of 0%. The number of positive emotions expressed had a PND of 60%, and all other categories had a maximum of 100%.

5.3.2 Case of Child C

5.3.2.1 Pretest

During the observed interactions between Child C and the teacher assistant, 93-95 initiatives were taken by Child C. The girl used four forms to communicate: gestures and vocalizations, as well as the higher communication forms of pictograms and signs in the air. During the pretests, the girl signed four times per session. Five different signs were seen during the two pretests: finished, cooking, toilet, help, and sitting. The pictograms were only actively used by Child C when the partner offered her an activity choice using pictograms. Child C uttered imperative intentions, communicating that she needed help, that she wanted something, or that she was done with an activity. Declarative communication was not seen. During the activities she showed positive emotions; however, this occurred on one day more than the others, varying between two and nine happy moments. Self-injurious behaviour or aggression towards the partner was not seen.

5.3.2.2 Response to intervention

During the posttests, an increase in initiatives was observed (Mean = 155 initiatives per teaching phase). Looking at signs that were made, we measured an increase in symbol use during interactions with the teacher: signing 10 to 19 times during a session, and expressing five to ten different signs during a post-assessment day. In total seventeen new signs were seen in addition to the signs she had already shown during pretesting: apple, cycling, filming, name of communication partner, climbing, getting, for me, drinking, away, game, would like, cheese, snack, sticks, there, bag, and sausage. The symbols “climbing,” “sticks,” and “sausage” were unfamiliar signs to the child before this assessment took place. This indicated that Child C was quick to learn and express new signs. Signs expressed by Child C are seen within the actual situation as well as outside the activity. During the teaching phase, one extra communication form was seen being actively used by the girl: hand-under-hand signing. The hand-under-hand signs were already seen in session one and were expressed when the partner just made a coactive sign, still holding each other’s hands. The sign for drinking was seen in session two when eating her apple (which is before receiving her drink), but was not performed after prompting until session four. During session four, the sign for drinking was made after step three of the prompting hierarchy (touching the hand), and during

session five the child made the sign after step one. There was evidence that the girl was able to make declarative intentions, communicating about cycling during drinking time in session one: The partner expanded on the sign “cycling” resulting in excitement and positive emotion in the girl, while continuing to sign “cycling.” Child C also understood that the teacher assistant was talking about something they had done together when the communication partner started a declarative communication. During the retelling, she showed excitement, she was processing information, one time she expressed a sign connected to the topic they were communicating about, and, in four of the five teaching phases, she showed positive emotions too. In general, more positive emotions were seen during the posttests (PND = 60%). One time she expressed a declarative intention (PND = 20%). The expression of signs that refer to an emotion, however, was not seen (PND = 0%). For all the other categories a maximum PND of 100% was achieved.

5.3.3 Case of Child P

5.3.3.1 Pretest

During a normal afternoon Child P performed 77-101 initiatives. Child P used four forms to communicate: generally by using gestures, and very rarely vocalizations, signs in the air, or pictograms. The pictograms were only used by Child P when the partner offered him an activity choice using pictograms. Seven different signs were observed being actively expressed by the boy: candy, eat, swing, drinking, smear, toilet, and “would like.” There were imperative intentions from the boy directed towards the partner, telling her that he wanted something (e.g., “tickle me on the back”) or to reject initiatives on the part of the partner (e.g., pushing the partner or object away). Declarative intentions were not seen, as were reactions to declarative communication initiated by the partner. During the afternoon, he had several moments of joy during interactions with his partner (five to six times). Self-injurious behaviour or aggression towards the partner were not seen.

5.3.3.2 Response to intervention

The number of initiatives taken by Child P did not change in response to the intervention (Mean = 77). Also no increase in the amount of symbol use was detected, and there were no other communication forms seen other than those already used by the boy. Signs made other than during pretesting were: “snack,” “hello,” “now,” and “play.” However, the boy was already familiar with these signs; they were not related to the assessment activities. Still, the boy responded quickly when being prompted, already making the sign for “drinking” after step one of the hierarchy. In response to the declarative intentions of the caregiver, the boy did express utterances. However, these were mostly expressions of rejection (e.g., pulling away from the partner’s body): No contributions were seen according to the content of the declarative communication. Although most categories had a PND of zero percent, more positive emotions were seen during the pretests (PND = 60%).

Table 1 Individual assessment results

		Pretest 1	Pretest 2
Number of initiatives taken	Child L	28	32
	Child C	95	93
	Child P	101	77
Number of signs expressed	Child L	0	0
	Child C	4	4
	Child P	2	6
Number of different signs	Child L	0	0
	Child C	3	4
	Child P	2	5
Number of different signs referring to an emotion	Child L	0	0
	Child C	0	0
	Child P	0	0
Number of forms used	Child L	2	2
	Child C	4	4
	Child P	4	4
Expression of declarative intentions	Child L	0	0
	Child C	0	0
	Child P	0	0
Number of initiatives when partner starts a declarative intention	Child L	n/a	n/a
	Child C	n/a	n/a
	Child P	n/a	0
Number of positive emotions	Child L	0	2
	Child C	9	2
	Child P	5	6
Mean challenging behaviour (bangs/minute)	Child L	5,36	1.63
	Child C and P	n/a	n/a

Posttest Teaching phase 1	Posttest Teaching phase 2	Posttest Teaching phase 3	Posttest Teaching phase 4	Posttest Teaching phase 5	PND (%)
126	80	38	46	125	100
162	171	134	161	145	100
57	81	82	74	90	0
1	8	2	2	6	100
19	11	10	12	12	100
5	3	5	2	3	0
1	3	1	1	2	100
6	9	5	10	10	100
4	3	2	2	3	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
3	3	3	3	4	100
5	5	4	5	4	100
4	4	4	4	4	0
0	0	0	0	0	0
1	0	0	0	0	20
0	0	0	0	0	0
2	4	n/a	7	6	100
5	7	11	6	5	100
9	9	11	n/a	13	0
8	22	1	0	9	60
12	7	6	10	14	60
3	11	8	3	7	60
0.47	0.28	0.87	0.27	0.06	100
n/a	n/a	n/a	n/a	n/a	n/a

Table 2 Effect of dynamic assessment procedure on child

	Child L	Child C	Child P
Increase in initiatives	+	+	-
Increase in signs expressed	+	+	-
Expression of new signs	+	+	-
Expression of a sign referring to an emotion	-	-	-
Increase in communication forms	+	+	-
Making use of hand-under-hand signing	+	+	-
Expressing declarative intentions	-	+	-
Positive reactions to declarative intentions by partner	+	+	-
Increase in positive emotions	+	+	+
Decrease in self-injurious behaviour	+	n/a	n/a

+ A positive difference between pre- and posttests is observed
 - No difference between pre-and posttests
 n/a Challenging behaviour was not seen during the assessment

5.4 CONCLUSION AND DISCUSSION

The current study focused on dynamic assessment as an approach to assessing the communicative abilities of children with congenital deafblindness. It can be concluded that the procedure developed for communication assessment, incorporating teaching sessions, provided insights into hidden potentials that could not be gained when testing without intervening and when testing at one point in time. Different abilities in the child become apparent when making use of the assessment procedure, that is the ability to: increase the number of initiatives taken during interactions, increase the use of signs to symbolize thoughts, expand the vocabulary by learning new signs, make use of a tactile communication form to transfer symbols with hand-under-hand signing, and use declarative communication. Furthermore, the impact of the changed partner approach on the number of positive emotions and challenging behaviours during interactions could be measured. Since the assessment was based on behavioural observation of interactions in natural environments, the administration of the assessment was not challenged by the seeing and hearing disabilities of the child, thus generating a valid picture of a child's strengths and needs. This assessment procedure responds to the call for assessments that include familiar communication partners and provide information on how to best support the child's individual needs (Losardo & Syverson, 2011) by examining the partner's abilities as well and by highlighting the communicative behaviours needed for high quality communication that a partner might be lacking.

This study not only proves that the dynamic assessment procedure has the capacity to examine several communicative abilities in children with congenital deafblindness but it also demonstrates the learning potential of these children and the rapidity with which they can learn. The children were able to progress, reaching higher levels of communication much quicker than thought. Learning new signs to use in communication, for example. Children with congenital deafblindness are able to learn to use new signs within only six to seven weeks.

Another implication of this study is the demonstration of the dependence of the child with congenital deafblindness on the partner, and the need to include the partner in the assessment. Coaching the communication partner in the performance of appropriate behaviours – during the assessment – resulted in development in the girls. This implies that the development of the child with congenital deafblindness requires a focus on the communication partner as well during the assessment. This is a rarity in the world of dynamic assessment, where most dynamic assessment procedures only focus on the child (e.g., Bain & Olswang, 1995; Feuerstein et al., 1979; Gutiérrez-Clellen & Peña, 2001; Hamers, Sijtsma, & Ruijsenaars, 1993; Haywood & Lidz, 2007; Van der Aalsvoort, Resing, & Ruijsenaars, 2002; Tiekstra, Hessels, & Minnaert, 2009), since an adult is seen foremost as a capable person able to assist the child to reach a higher level of development (Vygotsky, 1978). Furthermore, this phenomenon emphasizes the importance of professionalization.

5.4.1 Recommendations

In general, the activities and guidelines used were valuable and appropriate for use as dynamic measuring tasks aimed at measuring the communicative potential of children with congenital deafblindness. The procedure could be improved, however, by the following.

Additional attention should be devoted to children showing no progress at all. Although the total intervention package with five sessions over six to seven weeks worked for the two girls, showing magnificent improvements in most areas, it did not do so for the boy. There are several reasons why the procedure may affect one child, while resulting in no differences in another. In general, we are dealing with three areas that influence the outcome: the child, the partner, and the intervention. In terms of the child, one possible reason for not showing any improvement might be that he did not have the potential to develop any further than the communicative level he was functioning at, at that point. Another reason could be that he is a slower learner. Severe fatigue during the assessment can also be a reason for not showing any improvements. Moreover, sickness should be taken into account. Second, the intervention program can also influence the outcome, that is, in not having been on the right “wavelength” to bring about changes in this child. We observed the boy as seeming to adapt slowly to new activities and changes in structure, rejecting initiatives on the part of the partner that deviated from his normal daily structure at first, although becoming more interested over time. This implies that he probably needs more teaching sessions and time before changes will be observed. Furthermore, the boy saw his communication partner by far the least of all, when compared to the girls, so he had very few chances to practice the activities with his partner between the two sessions and rehearse the symbols. It is also possible that the activities did not fit in with his interests. The third factor that can be of influence is the potential of the partner to change and improve his or her communicative behaviour. The partner of Child C has worked for decades with children with congenital deafblindness, and has internalized the activities and most of the guidelines easily. The mother of Child L also adapted quite easily to the intervention. Although the partner of Child P showed progress, she had the greatest number of difficulties with implementing the intervention, which was also influenced by the rejections and withdrawal of the boy. Therefore, before conclusions are made about a child who apparently shows no development due to the intervention, many factors should be investigated first. Possible changes that can be made are: a) spreading the sessions over a longer period of time, b) increasing the frequency of the sessions, c) coaching the partner thoroughly – such as approaching the child tactually, imitating the behaviours of the child, or reflecting emotions – before resuming the posttests as soon as problem areas are signaled in the performance of the partner, d) performing the activities more often between two sessions so that the child becomes familiar with them, e) choosing another song or book and/or involving objects that are connected to the content of the song or book to make the activity more interesting, f) when the child really has no interest in the song or book, exploring objects and activities that are of interest to the

child and incorporating these in the assessment, following the same principles as the original activity (i.e., use of a tactile approach making movements, coactive signs, and touching in a fixed sequence), g) when the child shows no interest in activities or objects in the environment by itself during the assessment, thus impeding the “sharing interest” activity, the partner should introduce some new objects to the child, which might possibly be of interest and explored by the child, or performing the activity without objects, as in simply imitating the behaviours of the child, h) implementing the assessment at another time, and/or at another location, and/or with another communication partner, and i) examining whether physical discomfort is the factor that causes the lack of progress and, if so, postponing the assessment.

Extra intervention, distributed over a longer period of time, seems to be needed before the examiner is able to make valid conclusions about the child’s abilities in terms of declarative communication and symbolizing emotions. Declarative communication initiated by the child and the expression of symbols in response to declarative communication initiated by the partner were only seen once, in one child. The expression of signs referring to emotions was not found in any child within the intervention period. This indicates that the intervention period of six weeks is too short for most children in order to make decisions about their abilities in this regard.

When children are physically disabled, and making signs with their hands thus is not an option, the assessment should target other communication forms in order to symbolize their thoughts, such as tactile pictograms and pictures, and objects of reference. In this pilot study, we focused on the use of (tactile) signs for symbolization. However, not all children with congenital deafblindness are able to make signs because of physical disabilities. Since language development consists of adding vocabulary in whatever form it is understandable to and performable by the child (Miles & Riggio, 1999), other forms should be included in the assessment in such cases.

The prompting hierarchy used in this dynamic assessment procedure within the drinking activity turned out not to be suitable as an indication of learning potential, or an indication of the intervention the child needs, which is what prompting hierarchies are often used for (Burton & Watkins, 2007; Camilleri & Law, 2007; Lidz & Elliott, 2000; Spector, 1992; Olswang & Bain, 1996). After all, signs that were inserted for the first time during the assessment were observed to be used without even being prompted, sometimes already in the same session, while the prompted sign for “drinking” was not seen until the fourth or fifth session after many prompts or in an earlier session without being prompted. The exception to this was the boy, for whom this activity was not relevant, since he had already expressed the sign “drinking” during the pretests. We recommend skipping this drinking activity in future as a dynamic assessment task, since it did not provide any additional information. However, that is not to say that the drinking moment should not be included, observed, and analyzed, since a drinking moment can provide interesting interaction moments between the communication partner and the child (for declarative communication and sharing interest, for example).

One more aspect for obtaining high quality communication, which is not included in this assessment, is “negotiation.” Within the communication between the person with congenital deafblindness and the partner, uncertainty about the meaning of an utterance occurs relatively often (Souriau et al., 2008). According to Souriau et al. (2008), it is fundamental that the partner starts a negotiation when the partner is not sure about the meaning. This is done by confirming the utterance, giving interpretations, and giving the person his/her turn, and then waiting for acceptance or rejection of the interpretation. The child can neglect or accept the interpretations given, and add new utterances to clarify his/her intention (Golinkoff, 1986; Souriau et al., 2008). In this assessment, the partner was not coached in terms of negotiation. In future research, we want to include this guideline in the dynamic assessment as well, as a possible amplifier of the communicative abilities of the child with congenital deafblindness.

5.4.2 Future research

The results of this pilot study are promising, showing that increased information becomes available concerning the child’s communication potential and intervention planning by implementing the assessment in a dynamic way. Still, the factors discussed above will need to be addressed in further studies involving more participants. Furthermore, the impact of positively changing environmental factors such as lighting, sound, and the availability of motivating objects in addition to partner behaviours should be a focus of further research. Future research might also extend our findings with a study to explore whether the recommended intervention guidelines are pursued after the assessment, when coaching has stopped, since the partner behaviours after the assessment are just as important for developmental progress. Another important discussion point that should be studied in future research is the predictive validity of this assessment. Preferably, one would want a number that represents the expected performance in future, such as IQ. In this case, that is not possible. Still, the way a child’s learning rate is reflected in future performance can and should be examined. We always have to keep in mind, however, that any child with congenital deafblindness is able to learn if certain conditions are met, and that in their case small steps are in fact big steps.