Beyond the eyes

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CHAPTER

4

Reliable assessment of communication abilities in people with congenital deafblindness and in their communication partners using the Interaction and Communication Analysis List (ICAL)

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ABSTRACT

Few tools are available to assess the communication skills of persons with deafblindness as well as of their communication partners. Furthermore, there is insufficient attention paid to the psychometric properties of instruments developed for persons with deafblindness. The Interaction and Communication Analysis List (ICAL) is designed to evaluate the communication between a person with congenital deafblindness and their communication partners in order to surmount the limited focus on the assessment of partner abilities. In this study, the instrument and its reliability will be described. Eighteen lists were completed for 6 persons with congenital deafblindness and 12 communication partners, by 8 different observer pairs. Inter-observer reliability for total scores was generally good (80.5%). The results indicate critical revision of 6 of the 40 abilities in order to maximize reliability. Evidence that the ICAL provides reliable data is a major step forwards in evaluating assessment efficacy in the abilities of people with congenital deafblindness and of their communication partners so as to ensure high-quality communication in the long run.

4.1 INTRODUCTION

Due to combined visual and hearing impairments, communication with people with congenital deafblindness is often challenging (Downing, 2005; Wasson, Arvidson, & Lloyd, 1997). Their communication partners, such as parents, teachers, peers, and caregivers, are therefore often in need of support in order to interact in such a way that promotes development (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). As a consequence, communication does not occur without intervention (Rødbroe & Souriau, 1999).

Appropriate intervention must be linked with careful assessment (Huebner, Prickett, Welch, & Joffee, 1995; Vervloed, Van Dijk, Knoors, & Van Dijk, 2006). It begins with assessing a person's current level of abilities and then pushes toward higher skill levels (Rowland & Fried-Oken, 2010). When communication is the focus of the assessment, assessing the current ability level of both the person with deafblindness and their communication partners is recommended, as the partner, too, is in need of support in order to develop high-quality communication (Boers, Janssen, Minnaert, & Ruijs-senaars, 2013; Downing, 2005; Siegel-Causey & Bashinski, 1997; Wasson, Arvidson, & Lloyd, 1997). The use of the tactile sense during interaction will be elaborated on by means of illustration. Because visual and auditory stimuli cannot easily be perceived or processed by the person with deafblindness, it is necessary to also make use of the tactile sense during interactions (Janssen & Rødbroe, 2007, Miles, 2003; Nafstad & Rødbroe, 1999; Nicholas, 2010, 2012). For a hearing and seeing partner, however, it is difficult to imagine how this tactile world appears (Janssen & Rødbroe, 2007; Nafstad & Rødbroe, 1999). To improve communication, it is important to include in the assessment knowledge about the partners' ability to bring his/her tactile sense into play during interactions. Another example is the ability to express feelings and thoughts through the use of symbols developed in a particular communication form. Just as hearing and seeing children learn to speak by repetition of spoken words in a certain context, children with congenital deafblindness can only build a vocabulary with a partner who performs perceptible symbols during communicative exchanges (Souriau, Rødbroe, & Janssen, 2009). Hence, it is also important to assess the communication form used by the partner as well as the level of symbolization.

Significant work has already been done in the development of measurement instruments that address communication, and which are designed to be used with persons with deafblindness, with such instruments being developed as the Callier-Azusa Scale 'H' (Stillman & Battle, 1985), the Communication Matrix (Rowland, 2012), the Communication Observation Schedule (Tedder & Sikka, 1992), Dimensions of Communication (Mar & Sall, 1999), Identification of Congenital Deafblindness (Andersen & Rødbroe, 2006), and the Van Dijk Approach to Assessment (Nelson, Van Dijk, Oster, & McDonnell, 2009). A review of the literature clearly demonstrates, however, that existing measurement instruments developed for persons with

deafblindness have a limited focus in terms of the assessment of partner abilities (Boers, Janssen, Minnaert, & Ruijssenaars, submitted). In addition, we have found that information on the validity and reliability of instruments addressing communication in persons with deafblindness is scarce and, for those instruments that include some items on partner abilities, no psychometric properties of any kind are available. To overcome these limitations, a new valid and reliable instrument was needed that would include not only the assessment of the skills of persons with congenital deafblindness, but also the abilities of their communication partners.

For us, there was a second need for a new instrument addressing communication abilities in people with congenital deafblindness as well as in their communication partners: Our long-term goal is the development of an adequate dynamic assessment procedure that addresses communication in people with congenital deafblindness. Dynamic assessment is generally defined in terms of an interactive test – intervene – retest model (Haywood & Lidz, 2007, p. ix). This model links assessment with intervention and is viewed as an approach that enables examiners to move beyond merely testing current levels of performance. The added value of dynamic assessment is embedded in the fact that it has some capacity to disclose the barriers to better learning and performance, to indicate the kind of assistance required to improve performance, to disclose the responsivenss to intervention, and the investment required to promote long-term gains in performance (Haywood & Lidz, 2007, p. 12-14). 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, which provide important information (Haywood & Lidz, 2007; Lidz & Elliott, 2000, Tzuriel, 2000), but there are no studies found that report about dynamic assessment procedures developed for persons with congenital deafblindness (Boers, Janssen, Minnaert, & Ruijssenaars, 2013). To make judgments about the person's and partner's communicative abilities during pretesting and retesting, and the impact of the partner on the development of communication, a valid and reliable measurement instrument focusing on both persons should be part of the dynamic assessment procedure.

For these purposes, we have developed the Interaction and Communication Analysis List (ICAL) (Boers & Janssen, 2012). The aim of this article is to provide information on the usefulness of this newly developed measurement instrument and to provide data on the reliability of the ICAL.

4.1.1 Description of the ICAL

The ICAL is an observational measurement instrument assessing abilities that are important in both persons with congenital deafblindness and their communication partners so as to ensure high-quality communication. The ICAL was designed to pinpoint the abilities that are already developed in both persons, and the skills that need to be worked on. By implementing the ICAL in an ongoing way, it can also be used as a means to document improvements in communication and changed needs, which is

found to be very important by professionals working in the deafblind field (Lunden, 1990; Mar, 1995; Mar, 2010; Miles & Riggio, 1999; Rowland, 2009; Wolf-Schein, 1998).

The instrument comprises two parts: an interview and an observation list. Before analyzing the interactions an interview has to be administered with two of the most familiar communication partners. Information is contained about what the person can perceive and about some specific behaviours the persons with deafblindness expresses (e.g., the way the person is processing information, or how the person shows positive or negative emotions). This is necessary in order to observe the interactions well. The observation list contains questions about the abilities that are important in communication with a person who is congenitally deafblind. The questions can be answered by observing and analyzing videotaped interactions between a person with congenital deafblindness and one of the communication partners they are familiar with.

The ICAL involves the assessment of 40 major abilities of communication: 18 abilities focused on the person with congenital deafblindness, 18 abilities focused on the communication partner, and 4 abilities involving both of them (dyad). The abilities assessed can be found in Table 2.

4.1.2 Conceptual framework for the ICAL

The target abilities were first of all 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, Rødbroe, & Janssen, 2009). These booklets were developed based on a developmental psychological framework, and the information provided was mostly derived from clinical experience. As a supplement, existing instruments addressing communication in the field of deafblindness were studied (Boers, Janssen, Minnaert, & Ruijssenaars, submitted), as well as the work of Miles and Riggio (1999), Daelman (2003), and Lichtert (2004) on communication in deafblind, blind, and deaf persons. The abilities derived from this literature were verified by studying the literature on general communication development in the hearing and seeing of Bates (1976), Camaioni (1996), Golinkoff (1986), and Linell (1990), and by watching videotapes of persons with congenital deafblindness in interaction with communication partners, and clinical experiences with persons with congenital deafblindness.

The abilities formulated were classified, resulting in nine main categories: (1) attention, (2) regulation of intensity, (3) contact and confirmation, (4) tactility, (5) affective involvement, (6) form and symbolization, (7) topics and maintenance, (8) intentional communication, and (9) negotiation. Further on, the main content of these categories is explained, using both the term "interaction" and "communication". These terms are closely related. Interaction is defined here as "the process in which two individuals mutually influence each other's behavior". Communication implies interaction, but it is more than that. Communication is defined as "a form of interaction in which mean-

ing is transmitted by the use of utterances that are perceived and interpreted by the partner" (Janssen et al., 2003, see also Bjerkan, 1996).

Attention. To begin and continue interaction and communication, it is important that both persons are able to focus on each other and on the content of the interaction. There are two kinds of interaction: dyadic and triadic interactions. In dyadic interactions, the attention is only focused on the partner, at the level of the body. With triadic interactions the outside world is also involved: A third element becomes part of the interaction (Janssen & Rødbroe, 2007).

Regulation of intensity. 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. Persons with deafblindness often need time to process the higher intensity. To prevent overstimulation, frustration, and stress, the partner needs to wait before taking his/her turn until the person finishes processing (Janssen & Rødbroe, 2007; Janssen, Riksen-Walraven, & Van Dijk, 2003). Furthermore, for the interaction, it is positive when the person is able to regulate the higher intensity in an appropriate way, for example, by turning their head away. Inappropriate ways are self-injurious behaviour or aggressive behaviour towards the communication partner.

Contact & Confirmation. An interaction can be started by taking a perceivable initiative to make contact. For further progression of the interaction, it is necessary that the other person notices the contact initiative and that the utterance is perceivably confirmed. A good way for the communication partner to confirm the utterance of a person with congenital deafblindness is to imitate the expression or to indicate the expression itself (e.g., the person with deafblindness signs "bicycle"; the partner signs "You sign bicycle, what a nice trip we made this morning") (Janssen & Rødbroe, 2007).

Tactility. Because visual and auditory stimuli cannot be perceived or processed well by persons with deafblindness, it is necessary to make use of the tactile sense during interactions (i.e., touch and movement) (Janssen & Rødbroe, 2007). Janssen and Rødbroe (2007) suggest insertion of the tactile sense for different goals such as making contact, directing attention to a third element, confirmation of an utterance, to communicate information to the other, to "listen," for co-exploring an object or person, and to sense tension.

Affective involvement. As Janssen and Rødbroe (2007) say, the presence of positive emotions in the person and the partner can have a positive influence on their interactions and the development of the person with congenital deafblindness. Irrespective of whether the emotion is positive or negative, it is found to be important that the partner shares the person's emotions, not only so that he/she feels understood but also for the development of a shared vocabulary for several moods (Janssen & Rødbroe, 2007). According to Janssen and Rødbroe (2007), an emotion can be confirmed by imitation or by indicating the emotion (for example, by signing "you smile, it's fun to play together").

Form & Symbolization. There are several forms to communicate with. The most basic

forms in communication with persons with congenital deafblindness are body signals (e.g., facial expressions, whole body movements that refer to a bodily experience), gestures (e.g., pointing to an object, waving good bye, giving and reaching) and vocalizations (Miles & Riggio, 1999). Symbols can be transferred by objects of reference or pictograms, pictures, and drawings (visual or tactile), or by conventional sign language or idiosyncratic signs. Signs offer, in addition to speech, the best possibilities for extensive communication. These can be signs made in the air or co-actively. The hand-alphabet, braille, and writing also offer possibilities for extensive communication. Independent of the symbol system in use, one can employ one symbol, for example, the sign for "drinking," or employ two or more symbols to express oneself, for example, "I want to drink" or "Yesterday drinking [with] grandmother".The latter often leads to a clearer understanding of the message. As Souriau, Rødbroe, and Janssen (2009) mention, a person with congenital deafblindness can build a vocabulary by perceptible communicative exchanges with fluent speakers, especially partners who master signs very well, taking the interests and developmental level into account.

Topics & Maintenance. The larger the vocabulary of the person with congenital deafblindness and the partner, the more topics one can communicate about (Miles & Riggio, 1999; Souriau, Rødbroe, & Janssen, 2009). A dialogue can originate when both persons actively contribute to the communication, bringing up proposals and reacting to proposals (Rødbroe & Janssen, 2006; Linell, 1990). Interaction and communication becomes more reciprocal when the partner as well as the person with deafblindness take initiatives, and both follow and expand on the contribution of the other (Rødbroe & Janssen, 2006).

Intentional communication. The two most basic intentional communicative functions are the imperative and declarative function. The imperative function is defined as using a person as a means to obtain objects or reach other goals (Bates, 1976; Lichtert, 2004). A declarative intention indicates that the person is able to focus the attention of the other on an object, person, or event, just to share information about it (Bates, 1976; Camaioni, 1996; Daelman, 2003; Lichtert, 2004). One can refer to objects, persons, or events in the immediate environment, or to objects, persons, or events that are at another location, or events that happened in the past or will happen in the future (Lichtert, 2004). Persons with congenital deafblindness often only express one utterance that stands for something. The easiest thing to do is to interpret the utterance as an imperative intention. For example, the sign "drinking" stands for "I want to drink". However, Souriau, Rødbroe, and Janssen (2008) propose that only when the partner conceives some utterances as declarative as well, or by expressing a declarative intention, can the person with deafblindness learn that one can communicate about something, without a target being attached to it.

Negotiation. Within the communication between the person with congenital deafblindness and the partner, uncertainty about the meaning of an utterance occurs relatively often (Souriau, Rødbroe, & Janssen, 2008). When the partner is not sure about the meaning it is fundamental that the partner starts a negotiation about the meaning

by confirming the utterance, giving interpretations, and giving the person his/her turn, and waiting for acceptance or rejection of the interpretation. The person can neglect or accept the interpretations given, and add new utterances to clarify his/her intention (Golinkoff, 1986; Souriau, Rødbroe, & Janssen, 2008).

4.1.3 Content validity

After identification of abilities to be targeted for assessment, the second author – considered by the field to be an "expert" in communication and congenital deafblindness – was asked to examine the instrument for comprehensiveness of capabilities that are important for high-quality communication, after which the first version of the ICAL was finalized. Hence, the instrument was pilot-tested with two diagnosticians who were highly familiar with working with assessments among persons with congenital deafblindness. They were asked to administer the instrument, and to examine the appropriateness and comprehensiveness of the content, how adequately the sample of questions represented the content to be assessed, and the appropriateness of the format. Minor revisions were incorporated concerning comprehensiveness of the content, clarification, and format: Some questions were added, some definitions of behaviours and abilities were redefined, a few questions were reformulated, more space was provided for writing down answers, and space was provided for writing down things that attracted the examiner's attention during observation. Through this process an instrument was developed that has good content validity (Fraenkel & Wallen, 2008).

4.2 METHOD

4.2.1 Participants

Six persons with congenital deafblindness participated in the reliability study. The persons were selected on the basis of the criterion that they had dual sensory impairments from birth onwards. Four were male and two were female, of which five were children and one adult, aged from 6;4 to 49;3 years. The children were diagnosed with CHARGE syndrome, peroxisomal disorder related to Zellweger syndrome, Cornelia de Lange syndrome, West syndrome, and 13q deletion syndrome. The etiological condition of the adult was unknown. Three children were not only visually and auditorily disabled, but motorially disabled as well, having spasms and/or being confined to a wheelchair. For each person, two communication partners participated in the study: a parent or caregiver at home or at the group home, and a teacher or caregiver at school or day care. For each situation, the communication partner who saw the person most often was chosen for participation.

The observations were conducted by eight observers. Seven observers were working in the field of deafblindness and were familiar with performing assessments. One observer was not familiar with deafblindness but did work with deaf people and was an expert in the field of Total Communication.

4.2.2 Administration

To assess the abilities of both persons, the examiner started by filming interactions between the person and the communication partner, on a normal day. Interactions that showed the abilities of both persons best were chosen for analysis. Ten till fifteen minutes of interactions were selected for each person-partner pair in order to obtain a good picture of the abilities of both persons. This resulted in approximately 4-5 hours of observation time. After the interview was done, the interactions were analyzed, coding certain behaviours needed to make judgments about the abilities assessed. The Media Coder (Bos & Steenbeek, 2010) is the computer tool that facilitated the coding of the observations. We chose an observational computer program instead of coding with paper and pencil, as the use of the computer program was more convenient. Furthermore, the program calculates frequencies and percentages on the occurence of behaviours, which makes the assessment less time-consuming for the examiner. This calculation is useful because the conclusions made about an ability (Does the person have the ability, is it in progress, or does the person not have the ability?) are based on the frequency that a certain behaviour is present, and the presence of one behaviour in proportion to another behaviour. For example, if you want to know "if the communication partner is able to wait their turn while the person with deafblindness is processing information," you first need to find out those times when the person is processing information and then find out how often the partner waits until the person with deafblindness has processed the information. Then the percentage of the times the partner is waiting while information is being processed set out against the total number of times the person with deafblindness is processing information, can be calculated. The lower the percentage, the less this ability is performed by the partner. In the instrument, the examiner was given space to write down his judgment about the ability and to write down things that attracted his attention that were related to the ability, in order to support his given conclusion.

4.2.3 Procedures

Eighteen analyses were performed by the ICAL, each completed by two observers (in total, eight different observer pairs). Each observer attended a 4-5 hour training session on how to complete the ICAL, conducted by the first author. At the beginning of the session, the aim and the content of the analysis list were presented. Then the computer program needed to analyze the behaviours (Media Coder) was explained. A large part of the session was dedicated to providing information on the different abilities that are to be observed, using case examples to demonstrate abilities within each category.

After the observer analyzed the interactions, the quantitative results (frequencies, percentages) calculated by Media Coder were transformed by the observers into qualitative results. On the basis of their analysis of the Media Coder results, they judged the abilities as (dependent on the ability): (1) *yes, the person(s) has/have the ability/ no, the person(s) has/have not the ability;* (2) *the person shows the behaviour never or sometimes / often or always;* or (3) *the behaviour is presented none to little / half of the time / often to al-*

ways. For example, the person with congenital deafblindness and the partner are able to have declarative communication with each other (yes / no), the person with congenital deafblindness does regulate intensity positively (never or sometimes / often or always), the person with congenital deafblindness takes initiatives for contact (none to little / half of the time / often to always).

A reliability check was performed on the assignments made by the coders. The check consisted of computing the proportion of assignments on which the coders agree. Usually in such a check a correction for chance agreement is made (Cohen's kappa). We did not do this because the sample size is small and because distributions are skewed, which causes an extremely high amount of chance agreement and consequently a low outcome for the check (Feinstein & Cicchetti, 1990). Therefore, we measured the reliability using percentage agreement.

To investigate the reliability of the ICAL, 18 video excerpts of the interactions of a person with congenital deafblindness and their communication partner were selected. For every excerpt, we asked two observers to score the 40 communication abilities for the two persons, using the ICAL. At first we calculated the interobserver reliability, which is the degree to which the two independent observers agreed on the conclusions given, when evaluating the same data using the ICAL (Shaugnessy, Zechmeister, & Zechmeister, 2009). As we were also interested in which abilities were more difficult to judge than others, we examined the proportion agreement of the 40 abilities separately as well. For each ability, we counted the number of observer pairs who both agreed on that ability in relation to the number of observer pairs that disagreed on that particular ability.

Although there is no hard-and-fast percentage of agreement that defines low observer reliability, researchers generally reported acceptable estimates of reliability that exceeded 80 percent, suggesting that agreement much lower than that would be unacceptable (e.g., Kazdin, 1982; Meijne, Van Neerbos, Aufdemkampe, & Van der Wurff, 1999; Mudford, Hogg, & Roberts, 1997; Munde, Vlaskamp, Ruijssenaars, & Nakken, 2011; Nelson, Janssen, Oster, & Jayaraman, 2010).

4.3 RESULTS

4.3.1 Inter-observer agreement

All 18 video excerpts were scored using the Interaction and Communication Analysis List. Agreement for each list was determined by calculating across two observers the number of agreements, divided by the number of agreements plus disagreements, and multiplying by 100 to yield percentage scores. These ranged from 62.5% to 92.5%, with a mean score of 80.5% (*Mdn* = 79,5; *SD* = 8,1). An overview of the percentages for each list is presented in Table 1.

4.3.2 Reliability on ability level

To pinpoint abilities that examiners find difficult to score, reliability was examined for each ability separately. Agreement for each ability was determined by calculating across one ability the number of observer pairs that agreed on that ability, divided by 18 (all observer pairs), and multiplying by 100 to yield percentage scores. As shown in Table 2, the reliability of individual abilities was generally good to excellent: 23 abilities had an agreement score of 80% to 100%. For a subset of abilities, the reliability was more modest (i.e., 65%-80%; notably, this concerned ability 3, 6, 7, 9, 16, 17, 25, 29, 31, 39, and 40). Six abilities proved to have a reliability lower than 65% (notably, ability 8, 24, 26, 27, 32, and 37).

Table 1 Results for inter-observer reliability

Assessment	**Percentage Agreement (%)**
Bart home	82.5
Bart school 1	80.0
Bart school 2	85.0
Ben group home	78.9**
Ben day care 1	70.0
Ben day care 2	82.5
Marc group home 1	92.5
Marc group home 2	72.5
Marc day care	92.5
David home	76.9*
David school 1	62.5
David school 2	78.9**
Linda home	74.4*
Linda day care 1	76.9*
Linda day care 2	87.5
Barbara group home	85.0
Barbara school 1	92.5
Barbara school 2	77.5
Mean	***80.5***

* One missing value, agreement based on 39 abilities
** Two missing values, agreement based on 38 abilities

Table 2 Description of the abilities in each category and results for reliability on ability level

Category	Who	Ability	Percentage agreement (n=18 observer pairs)
Attention	*Person*	1. Attention paid to the partner (yes/no) 2. Attention paid to the partner (short/long) 3. There is shared attention paid to the partner and a third element	94.4% 88.9% 66.7%
	Partner	4. Attention paid to the person (yes/no) 5. Attention paid to the person (short/long) 6. Person knows when partner is paying attention	94.4% 94.4% 77.8%
Regulation of intensity	*Person*	7. Appropriate regulation of intensity (positive)	72.2%
	Partner	8. Wait before taking a turn, while person is processing information	52.9%*
Contact & Confirmation	*Person*	9. Taking the initiative to make contact	77.8%
	Partner	10. Taking the initiative to make contact, perceivable by the person 11. Confirms a contact initiative, perceivable by the person 12. Confirms by imitation or by indicating	100.0%* 92.3%** 84.6%**
Tactility	*Person*	13. Use of tactile sense during interactions	94.4%
	Partner	14. Use of tactile sense during interactions	94.4%
Affective involvement	*Person*	15. Giving an adequate reaction to an emotion of the person	81.3%***
	Dyad	16. Presence of positive emotions 17. Presence of positive emotions with both persons	73.3%**** 76.9%*****
Form & Symboli-zation	*Person*	18. The form used to communicate 19. Employ two or more symbols to communicate thoughts 20. Use of symbols standing for "objects or persons" 21. Use of symbols standing for "activities" 22. Use of symbols standing for "emotions" 23. Use of symbols standing for "abstract things"	94.4% 100.0% 100.0% 94.4% 94.4% 100.0%
	Partner	24. The form used to communicate 25. Employs two or more symbols to communicate thoughts 26. Use of symbols standing for "objects or persons" 27. Use of symbols standing for "activities" 28. Use of symbols standing for "emotions" 29. Use of symbols standing for "abstract things"	27.8% 68.8%****** 55.6% 50.0% 94.4% 72.2%
Topics & Maintenance	*Person*	30. Starting topics to communicate about 31. Able to maintain the communication about a topic him/herself	83.3% 72.2%
	Dyad	32. Able to maintain communication (3 or more exchanges)	61.1%
Intentional communica-tion	*Person*	33. Expressing imperative intentions 34. Expressing declarative intentions 35. Expressing intentions aimed at objects, persons, or events outside the direct environment	88.9% 94.4% 94.4%
	Partner	36. Reacts to person's utterance as being declarative 37. Expressing declarative intentions	100.0% 55.6%
	Dyad	38. Able to communicate declaratively together	94.4%
Negotiation	*Person*	39. Add new utterances to clarify meaning of expression	66.7%*******
	Partner	40. Starts negotiation when utterance of person is not clear	72.2%

* One missing value, n = 17 pairs.

** Measured for those observer pairs who both measured at least one confirmation of the partner to a contact initiative by the person with deafblindness, n = 13 pairs.

*** Measured for those observer pairs who both measured at least one emotion on the part of the person with deafblindness, n = 16 pairs.

**** Measured for those observer pairs who both measured at least one emotion on the part of the person with deafblindness and/or of the partner (n = 16), and one missing value, n = 15 pairs.

***** Measured for those observer pairs who both measured at least one positive emotion on the part of the person with deafblindness and/or of the partner (n = 15), and two missing values, n = 13 pairs.

****** Two missing values, n = 16 pairs.

******* Measured for those observer pairs who both detected at least one uncertainty about an utterance on the part of the partner, n = 9 pairs.

4.4 CONCLUSION AND DISCUSSION

The present study examined inter-observer reliability and reliability at ability level of the Interaction and Communication Analysis List (Boers & Janssen, 2012), a newly developed observational measurement instrument designed to evaluate the communicative abilities of a person with congenital deafblindness and his/her communication partner as needed for high-quality communication. Supplementary to the existing instruments addressing communication in persons with deafblindness, this new instrument enables the inclusion of communication partner abilities during the assessment (Boers, Janssen, Minnaert, & Ruijssenaars, submitted). Given the practical value of this instrument, the aim of this study was to explore whether the ICAL was a reliable instrument for analyzing communication between persons with congenital deafblindness and their communication partners. The application of the ICAL in 18 videotaped excerpts of interactions between persons with congenital deafblindness and their communication partners supported this: The overall inter-observer reliability was good, and most of the abilities can be reliably assessed. These findings are encouraging. However, a number of details need to be discussed, since the large range of results is striking.

The lower agreement scores can partially be explained by the severity of the disabilities of people with congenital deafblindness. Because of their disabilities, the behaviours of persons with congenital deafblindness are differentiated and – compared with people who can hear and see – are not easy to read (Downing, 1993; Grove, Bunning, Porter, & Olsson, 1999; Iacono, Carter, & Hook, 1998; Porter, Ouvry, Morgan, & Downs, 2001). This might have aggravated some of the observations of the persons with congenital deafblindness (Hogg, Reeves, Roberts, & Mudford, 2001). Still, the study on ability level indicated several abilities in the partner as well that seem difficult to analyze, demonstrating that the severity of the disabilities of the person with congenital deafblindness is not the only reason.

The clarity of the description of the behaviours and abilities that have to be analyzed may also have an impact on the reliability of the results. When checking the answers of the observers, it turned out that some of the instrument content was interpreted differently. The term "object of reference," for example, was confusing for some observers (communication form). And precisely when something could be considered an adequate reaction of the partner to an emotion of the person with deafblindness (affective involvement) did not seem to be clear enough. The term "symbol" (symbolization) was also unclear; some observers included words spoken by the partner, or considered gestures, such as touching the zipper of a jacket as an intention to take off the jacket, to be symbols as well (which was not the intent of this instrument). To maximize the chance of univocal observations, unambiguous definitions of behaviours and abilities are needed (Kerlinger & Lee, 2000; Van de Sande, 1999).

To oblige the observer to code specific behaviours that are important for judging an ability also seems to be an important factor in the reliability of the results. For all categories, the observers were asked to code specific behaviours, except for the category "Form & Symbolization." For this category, they were only asked to view the whole video section, and then answer the questions addressing the communication form used by both persons and symbol use. Especially for partner abilities, we noted that the observers had difficulty answering the questions in this category accurately: By checking those questions the observer-pairs disagreed about, we noted that especially those forms that were used only once or twice were overlooked by some observers, as were symbols. This indicates the need to really orientate the attention of the observer to all behaviours that are important to notice, by letting them code the behaviours (Margolin et al., 1998).

Although these are significant threats to reliability, we can conclude that reliable observations in people with congenital deafblindness are in fact possible while making use of the ICAL. This certainly constitutes progress, when taking into account the specificity of the target group and the relatively long duration of observation. If used as designed, and when examiners are trained before implementing the ICAL for the first time, at least examiners who are familiar with persons who are congenitally deafblind and with performing assessments can use the ICAL with confidence in order to examine the communicative abilities present in the person with deafblindness and the partner, and for evaluating progress made. The relatively small number of abilities that were found to be less reliable will be revised in order to obtain even higher reliability in the near future. A recommendation for future research would then be research into the validity of the abilities measured. The importance of the abilities assessed for obtaining high-quality communication is mostly based on clinical experience. However, as no studies have been conducted to underpin these statements, empirical proof is lacking. Furthermore, we will be continuing to work on the construction of intervention guidelines. The translation of the results into Individualized Education Programs (IEP) and educational goals is a well-known problem and a concern raised by many professionals working with people with deafblindness (Rowland, 2009). Pinpointing the abilities that are in need of support is a first, essential step in appropriate intervention in order to develop communication in persons with congenital deafblindness. However, to really serve the deafblind field, it would be very helpful to have intervention guidelines as well, ones suitable for the abilities assessed. This will be our next goal, which will take the form of a dynamic assessment procedure.