Meaningful modalities

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Chapter 2

Introducing an Intervention Model for Tactile Communication for persons who are congenitally deafblind and their communication partners

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Abstract

The current article introduces the Intervention Model for Tactile Communication (IMTC), which was designed to train communication partners (for example, teachers, caregivers, parents) in adequately using tactile-bodily interactive and communicative behaviors during interaction and communication with persons with congenital deafblindness.
The article describes the theoretical underpinning and discusses practical implications of the IMTC.

2.1 Introduction

When participating in everyday interaction and communication, people with congenital deafblindness (CDB) have to rely on the near-sense: the tactile-bodily modality (i.e., touch). This implies that, to a large extent, they gather information and process it in a fragmentary way that is based on bodily-emotional impressions (Daelman, Nafstad, Rødbroe, Souriau, & Visser, 1999; Janssen & Rødbroe, 2007). However, their communication partners are typically hearing and sighted and primarily use their distance senses to gather and process information. They therefore prefer the oral-auditory communicative modality (hearing and talking) for interaction and communication, and lack the natural skills to participate in the world of touch and proximity (Chen & Downing, 2006; Goode, 1994; Janssen, Riksen-Walraven, & Van Dijk, 2002).

These differences have a negative effect on everyday interaction and communication and create a serious risk that the person with CDB will have problems with communicative development. This study defines these differences in terms of a 'communicative modality mismatch.' To minimize its negative effects, intervention programs should aim to create opportunities for successful use of the tactile-bodily modality. These opportunities form an essential prerequisite for the communicative development of people with CDB (Chen & Haney, 1999; Souriau, Rødbroe, & Janssen, 2008, 2009).

This study describes the background and content of a partner-oriented intervention model that was designed to optimize the use of tactile-bodily strategies: the Intervention Model for Tactile Communication (IMTC). The first sections of this study describe the importance of using a

modality-specific approach in early interaction and communication. Next, it discusses the role of the tactile-bodily modality in interaction and communication with people with CDB. The final section presents the actual intervention model.

2.2 Background: Importance of a Modality-Specific Approach in Early Interaction and Communication

The distance senses (vision and hearing) play an essential role in the process of early interaction and communication in young sighted and hearing children, since the oral-auditory modality (e.g., speech) provides the basis for getting and giving meaning in communicative settings (Chen & Downing, 2006; Perez-Pereira & Conti-Ramsden, 1999). Historically, research on communicative development has focused on the importance of developing speech and the role of auditory access to interaction and communication. More recently, this focus has been expanded to the importance of visual access. Gestures, for example, appear to be important to the initial stages of communicative development (Iverson, Capirci, Longobardi, & Caselli, 1999; Volterra, Iverson, & Castrataro, 2005). Several studies have reported that young children use visual cues to gain access to the social interactive situations that form the basis for early interaction and communication (Capirci, Iverson, Montanari, & Volterra, 2002; Iverson et al., 1999; Perez-Pereira & Conti-Ramsden, 1999). Visual attention between young children and their parents forms an important first step in the process of turn-taking and confirming mutual understanding (Perez-Pereira & Conti-Ramsden, 1999; Reddy, 2008; Trevarthen & Aitken, 2001; Volterra et al., 2005).

Children with sensory disabilities use other communicative modalities. Visual perception plays a crucial role for people with deafness; the visual-gestural modality (e.g., visual gestures, fingerspelling) provides the basis for perceiving and processing information. On the other hand, people with blindness use the auditory-tactile modality (e.g., speech, facial expressions). People with dual sensory disabilities use the tactile-bodily modality (e.g., combinations of body postures, touch, vocal sounds).

Processes of early interaction and communication in young children with sensory impairments require modality-specific adaptations from the earliest adult-child exchanges of shared emotions, called 'proto-conversations' (Trevarthen & Aitken, 2001). To be able to share affective states and create affect attunement, communication partners need to adapt to the communicative modality that is fully accessible and most motivating. Research has revealed that children with deafness are able to acquire a full-fledged sign language if their communication partners are able to adapt to the visual-gestural communicative modality. Children with deafness who are raised in an environment in which adults with sight and hearing do not adapt to the visual-gestural modality show major delays in communicative development (Moeller, 2009; Yoshinaga-Itano, Sedey, Coulter, & Mehl, 1998). With regard to children with congenital blindness, research indicates that communication partners' modality-specific adaptations are necessary for successful communicative development (Gleitman & Landau, 2009; Perez-Pereira & Conti-Ramsden, 1999). Although children with blindness have access to the oral information of spoken languages, specific adaptations are needed to compensate for the lack of access to the visual aspects that accompany the oral-auditory modality (Gleitman & Landau,

2009; Perez-Pereira & Conti-Ramsden, 1999). To successfully create social-communicative behaviors like joint attention and imitation, communication partners need to use the auditory-tactile modality to adapt to the preferences and possibilities of the child with blindness.

Several studies have indicated that children with CDB encounter serious difficulties and high levels of stress when participating in the partner-child exchanges of sharing affective states and creating affect attunement (Hart, 2006; Martens, Janssen, Ruijssenaars, Huisman, & Riksen-Walraven, 2014; Trevarthen & Aitken, 2001). Since communication partners do not have the natural skills to adapt to the tactile-bodily modality, adequate use of it appears to be very problematic. Therefore, young infants with CDB face immediate and long-lasting disadvantages that negatively affect interaction and communication (Goode, 1994; Janssen, Riksen-Walraven, & Van Dijk, 2003a; Van Dijk, 2002). It is clear that, especially in cases where children have dual sensory impairments, the negative effects of the communicative modality mismatch might result in poor communicative development.

2.3 Analyzing the Role of the Communicative Modality Mismatch

The restricted access of people with CDB to one of the conventional communicative modalities severely affects processes of interactive and communicative development. Many people with CDB function on a pre-linguistic level for most of their lives (Bruce, 2005; Rødbroe & Janssen, 2006; Rødbroe & Souriau, 1999). Dual sensory disabilities often also cause serious delays in cognitive and social development, orientation and mobility

(Chen & Downing, 2006). These affected processes inevitably lead to serious problems.

Communicative acts that underlie the tactile-bodily communicative modality (e.g., tactile gestures, body postures) should be used to create interaction and communication (Aitken, 2000; Bruce, 2005; Chen & Downing, 2006; Janssen & Rødbroe, 2007; Mesch, 2001; Rødbroe & Janssen, 2006; Rødbroe & Souriau, 1999). This dependence on tactile-bodily communicative acts illustrates the communicative modality mismatch that is demonstrated in interactive and communicative behaviors performed by communication partners who are not attuned to the behaviors of people with CDB (Chen & Downing, 2006; Nafstad & Rødbroe, 1999). Several fundamental problems arise from this mismatch (Janssen et al., 2002, 2003a): 1) people with CDB perceive and process information in a fragmentary way (Daelman et al., 1999; Janssen & Rødbroe, 2007) and 2) many of them appear to function on a transition level of pre-linguistic to linguistic communication (normally reached between 0–2 years of age) (Bruce, 2005; Janssen et al., 2002, 2003a; Nafstad & Vonen, 2000). These problems are likely to result in a serious lack of adequate input from the environment, which leads to stagnation in communicative development and creating harmonious interactions (Janssen et al., 2002, 2003a). Minimizing these negative effects is an essential prerequisite for interactive and communicative development, starting with training partners to adequately use the tactile-bodily communicative modality.

2.3.1 The tactile-bodily modality in interaction.

Optimizing processes of early interaction and communication requires

modality-specific adaptations. In this study, 'interaction' is defined as a 'process of mutually influencing each other's behavior'; 'communication' is defined as 'a form of interaction in which meaning is transmitted by the use of utterances that are perceived and interpreted by the partner' (Janssen et al., 2003a). Modality-specific adaptations of communication partners' interactive behaviors are essential for creating optimal turn-taking processes; smooth alternations of initiatives is an essential condition for creating harmonious interactions (Janssen et al., 2003a).

2.3.2 The tactile-bodily modality in communication.

Creating and using narrative-based communication is crucial to optimizing the use of communicative skills. However, there tends to be a focus on functional non-narrative-based communication (e.g., imperative communication in which the communication partners are instrumentally used to fulfil primary needs) (Rødbroe & Souriau, 1999). Functional communication results in less declarative narrative-based communication that is focused on sharing feelings, emotions and thoughts that accompany impressive experiences (Nafstad & Rødbroe, 1999; Souriau et al., 2008, 2009). Narrative-based communication serves several important functions in everyday life in the processes of transferring, exchanging and structuring information (Souriau et al., 2008). According to the IMTC, partners should be explicitly trained to adapt their skills with respect to narrative-based communication (e.g., creating shared attention, recognizing highlights) in a tactile-bodily way, enlarging the amount of tactile-bodily input that a person with CDB receives.

2.4 Intervention Programs for People with CDB

Several intervention models and strategies have been developed (Chen & Downing 2006; Rødbroe & Souriau, 1999). Some are designed to improve interaction and communication by focusing on the use of alternative communication forms or functional communication in everyday situations (Durand & Berotti, 1991; Sigafoos, Didden, Schlosser, Green, O'Reilly, & Lancioni, 2008). Only a few of them are based upon systematic observation and analysis of actual interaction and communication (Janssen et al., 2003a).

The Contact intervention program, developed by Janssen and colleagues (2003a, 2003b), introduced the Diagnostic Intervention Model (DIM). Intervention studies on the DIM's effects indicate that the program successfully helps communication partners to become better attuned to individuals with CDB, an important prerequisite for creating harmonious interactions (Janssen et al., 2002, 2003a, 2003b). Clear effects have been reported for most of the interactive behavioral categories defined for the DIM (e.g., initiatives, confirmations). On a group level, the increase of target behaviors by caregivers and children was statistically significant and, generalized across caregivers and contexts, durable over time (Janssen et al., 2002, 2003b).

Another project, Successful Adaptations for Learning to Use Touch Effectively (SALUTE), focused on instructional strategies for children with visual impairments and multiple disabilities (Chen & Downing, 2006; Chen, Downing, & Rodriguez-Gil, 2000; Chen & Haney, 1999). In SALUTE, tactile strategies were examined based on and supported by social interaction and communication with four children who participated in an

intervention study. Data analysis of videotaped observations indicated an increase in the communication partners' use of appropriate tactile strategies.

Though none of the earlier intervention programs explicitly focused on the role of the communicative modality mismatch within the intervention process, the IMTC has that aim. It focuses on optimizing the use of both tactile interactive (e.g., taking initiatives) and communicative skills (e.g., using tactile-bodily signs). This intervention model serves as a basis for the intervention program on tactile communication. The IMTC defines interaction as an essential prerequisite for communication. It trains communication partners to use tactile-bodily interactive strategies to create mutual attunement of behaviors and emotions, and to use tactile-bodily communicative strategies to create meaning and share experiences.

2.5 The Intervention Model for Tactile Communication

The aims and principles of the IMTC are presented in Figure 1.

The principles are aimed at improving communication partners' capacities to: a) use Tactile Sign Language in practice, b) recognize individual tactile-bodily behaviors, c) attune behaviors in a tactile-bodily way, d) create shared attention, e) recognize highlights and f) construct narrative-based communication.

A communication coach trains the communication partners to use tactile-bodily interactive and communicative behaviors in practice. The coach, who plays a crucial role in the program, is someone with experience in working with people with CDB and in coaching partners.

Communication partners are trained over several individual and team coaching sessions. Team sessions are aimed at discussing the preferred

changes to the use of tactile-bodily strategies in interaction and communication. Participants in the individual coaching sessions are selected by consulting the team. In these individual sessions, coaches give feedback based on video fragments of at least 20 minutes from everyday situations that are videotaped on a weekly basis. During each session, the coach and the communication partner watch and analyze the recent fragments that are most relevant to the interactive and communicative target behaviors.

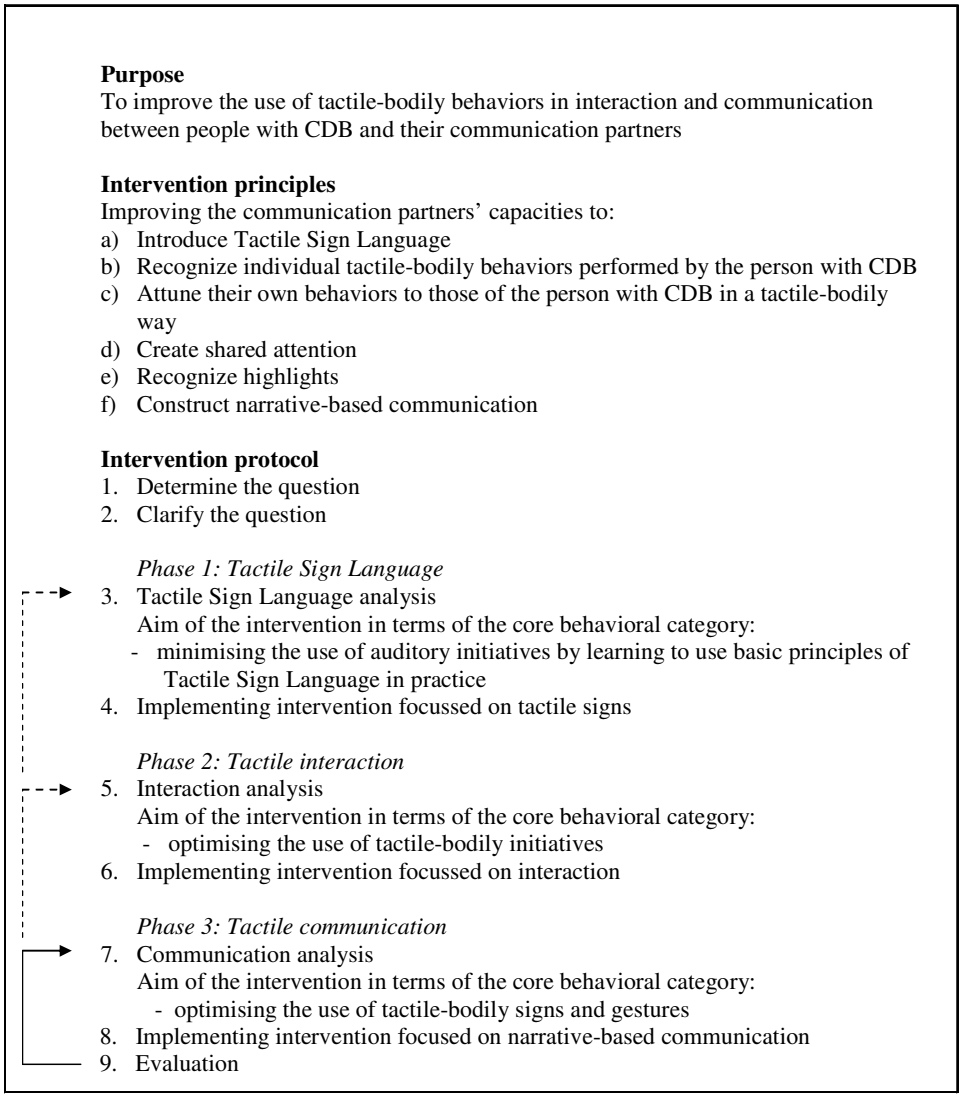

Figure 1: The Intervention Model for Tactile Communication

2.5.1 Applying the IMTC. The coach applies a nine-step protocol (see Figure 1).

1. Determining the question. The communication partner requests coaching in using tactile-bodily behaviors for interaction and communication**.** For example, "how can we best make contact during daily situations like preparing lunch?"

2. Clarifying the question. The coach clarifies the question and examines whether the conditions for successful implementation are present: 1) does the person with CDB meet the criteria for dual sensory impairments and 2) are the communication partners willing to commit themselves to the intervention program. The coach and partner(s) then work together to develop the definitive questions for coaching. For example, "which hand-under-hand techniques can we use to involve Tom more actively in preparing food and drinks?" Next, the coach gathers information from the personal file, additional live observations and hands-on assessment (Nelson, Van Dijk, Oster, & McDonnell, 2009) with regard to: 1) the general interactive and communicative features of the person with CDB and his/her relevant adapted behaviors and 2) the most optimal physical and social contexts for creating interaction and communication. Then the coach uses video analysis to define a limited number of intervention aims that apply to the core categories of tactile-bodily interactive and communicative behaviors that have been defined (Figure 2). Finally, the coach consults with the communication partners to determine the specific interaction situation(s) and the type of coaching required.

3. Tactile Sign Language analysis. With the help of a teacher specialized in using Tactile Sign Language of the Netherlands (TSLN), the

coach designs a tailor-made course in consultation with the communication partners that is attuned to the person with CDB.

4. Implementing intervention phase 1: Tactile Sign Language. Phase 1 starts with the TSLN-course, which trains participants to actively and adequately use tactile signs and/or gestures in everyday situations. They also receive general information about TSLN and its use in practice (e.g., how to make contact or take turns).

5. Interaction analysis. The coach uses video analysis to define a limited number of intervention aims. Tactile-bodily initiatives are defined as 'starting an interaction or raising something new as part of a reaction by actively using the tactile-bodily modality' (definition derived from the Contact intervention program (Janssen et al., 2003b; Trevarthen & Aitken, 2001) and adapted for the IMTC)). For example, a communication partner could take turns by putting Tom's hands under her own to clarify that Tom can take an initiative now.

6. Implementing intervention phase 2: Tactile-bodily behaviors in interaction. After defining the intervention aims, the coach starts training communication partners to optimally use tactile-bodily initiatives. They are trained for 10 weeks.

In a one-hour team coaching session, the coach discusses the purpose and content of the program and the interaction phase in particular, the definite questions for coaching and the final intervention aims. The coach stresses the importance of adequately and actively using the tactile-bodily modality and defines the training program that is used during this intervention phase, illustrated with several video fragments to clarify the

most relevant intervention principles: a) optimizing turn-taking processes and b) supporting auditory initiatives in a tactile-bodily way.

In individual coaching, each participant receives supervision in one-hour sessions. The first session consists of information and a discussion about the importance of optimally and adequately using the tactile-bodily modality. The coach and partner discuss specific questions for interaction coaching; for example, "how can we best make contact during a weekly activity?" Observations of and feedback on the video recordings of a certain interaction situation are also central, followed by instructions on how to use specific tactile-bodily interaction strategies. In the second and third individual sessions, the past weeks are evaluated, the instructions from the first session are discussed and new instructions are defined based on recent video fragments.

7. Communication analysis. The coach uses video analysis to define a limited number of intervention aims that apply to the core category of tactile-bodily communication. Partners are trained in narrative-based communication by: a) creating shared attention, b) recognizing highlights (points of interest) and c) using tactile signs and/or gestures. Communication partners should be able to recognize and follow the attention of a person with CDB. As a next step, they should be able to recognize and share the specific attention cues (highlights) (Rødbroe & Souriau, 1999). For example, a communication partner can create shared attention by recognizing and following how Tom moves his head to feel the wind blow in his face (highlight) during the weekly bicycle tour. She can co-actively move with Tom by letting one of Tom's hands feel the movements of her head when walking besides Tom's bicycle. Afterwards,

she can try to have a conversation about the bicycle tour by repeating the head movements in combination with blowing from the mouth and letting Tom feel this.

The IMTC defines ‘tactile signs’ as ‘using signs from a conventional sign language in a tactile-bodily way.’ ‘Tactile gestures’ are defined as ‘using non-conventionalized forms of interaction and communication in a tactile-bodily way.’ For example, a communication partner can use the tactile-bodily gesture for ‘Christmas’ to start a conversation about last week, when she and Frank decorated the Christmas tree together. Creating shared attention, recognizing highlights and being able to actively use tactile signs and/or gestures are essential prerequisites for creating narrative-based communication.

8. Implementing intervention phase 3: Tactile communication. After the intervention aims are defined, the coach starts implementing the third phase by training partners to create narrative-based communication in interaction and communication by actively using tactile signs and/or gestures. Individual and team coaching meetings are planned over a five-week period.

One team coaching session is arranged, starting with a discussion about the purposes and contents of the IMTC, the definite questions and the final intervention aims for this phase. The coach discusses the importance of adequately and actively using tactile signs and/or gestures while creating narrative- based communication and explains the training program for this final phase. Several video fragments illustrate the different stages of the third intervention phase: 1) creating shared attention, 2) recognizing

highlights, 3) using tactile signs and/or gestures and 4) creating narrative-based communication.

Three one-hour individual coaching sessions are planned at the start of the third phase. During the first session, the coach uses video fragments to provide feedback on the general importance of creating narrative-based communication and the use of tactile signs and/or gestures. For example, the coach teaches communication partners to transform motivating everyday situations into narrative-based experiences in which highlights are central and relevant tactile-bodily signs and/or gestures are used.

The second session elaborates on the importance of narrative-based communication by introducing three competencies that partners can use: 1) creating shared attention, 2) recognizing highlights (points of interest) and 3) being able to support constructing narrative-based communication. New instructions are then defined; for example, "write down the different highlights that Tom seems to experience during the weekly bicycle tour and think about how they can be used later to create a narrative-based conversation."

The implementation of instructions from the previous sessions is discussed in the third session. Relevant partner competencies include creating equivalence and creating spontaneous versus planned-in-advance communication. Discussion and video feedback lead to new instructions; for example, "based on what you've learned so far, design a plan for making peeling and eating a banana a narrative-based experience for Karen."

9. Evaluation. All three intervention phases are evaluated in a separate team session that includes a written report, in which the outcomes

of the intervention are central, and a compilation of video fragments used to illustrate the different intervention phases. The communication partner uses them to complete a personal education plan for the person with CDB. The experiences of the partners' participation in the intervention program are evaluated using a questionnaire about their satisfaction with the program's content. This also establishes the social validity of applying the IMTC. Finally, the coach and the partners evaluate the training, discuss how the partners can maintain and/or elaborate on what they learned and determine whether the intervention should be stopped or continued.

2.6 Conclusion

This paper describes the IMTC, which was designed in reaction to communication partners' requests for interaction and communication coaching. A dual sensory impairment from birth or from a very early stage in life leads to difficulties in interaction and communication that often result in stagnant communicative development (Bruce, 2005; Nafstad & Vonen, 2000; Rødbroe & Janssen, 2006; Rødbroe & Souriau, 1999). To enable optimal use of the tactile-bodily communicative modality, communication partners need intensive training in stimulating communicative development.

2.6.1 Implications for the Future

Future studies will evaluate the effectiveness of applying the IMTC. First, a case study will describe a situation in which the intervention was carried out with a young boy with CDB and two of his communication partners. Second, two intervention studies (with 8 clients and 23 partners) will be

carried out to determine whether results can be replicated and deemed effective for a larger group of people.

Preliminary results indicate that the IMTC is successful in teaching interactive and communicative skills for using the tactile-bodily communicative modality. Several analyses show improvements in the use of tactile signs and/or gestures, using tactile interaction strategies and creating narrative-based communication.

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