Facilitating Communication with a Congenitally Deafblind Child by Imitation of a Repetitive Routine

The authors of this article aim to show how imitation can be used in developing communication with individuals with deafblindness. Using a case study of a twelve year old girl who has some residual hearing they examine how verbal imitation of a repetitive sign sequence used by the child led to the development of her communication and language.

KATHLEEN DEASY is a teacher for the deafblind and postgraduate student at the department of psychology, National University of Ireland, Maynooth. FIONA LYDDY is a senior lecturer at the Department of Psychology, National University of Ireland, Maynooth.

INTRODUCTION

Congenital deafblindness involves significant impairment of both vision and hearing from birth or early childhood. The precise degree of sensory loss varies, the resulting heterogeneity limiting research in this area (Ronberg and Borg, 2001). The dual sensory deficit is generally prelingual and profoundly affects the potential for communication. Since much of early parent-child interaction preceding language utilises visual and auditory channels, from infancy there is a “mismatch between the immediate behaviour repertory of the congenitally deafblind child and the reactive behaviours of the adult partner” (Nafstad and Radbroe, 1997, pp. 165-166). This mismatch is arguably a greater obstacle to the attempt to acquire language than the sensory deficits themselves (Hart, 2008) and overcoming the mismatch is a key objective of communication strategies for deafblind people. As Hart (2006) notes, “all congenitally deafblind people are potential communication partners. The key question...is how to help them achieve that potential” (p. 264).

To begin with, the mismatch that constrains early interaction must be re-aligned and, to this end, there is a need for a communication partner to be able to respond to communicative attempts that appear in a variety of forms (Bruce, 2003; O’Neill, Jones and Zeedyk, 2008; Deasy and Lyddy, in press), including, in some cases, in the form of repetitive behaviours or apparent stereotypes (Murdoch, 1997). One
way in which this might be achieved is through imitation of extant patterns of behaviour. This paper examines the use of imitation in supporting communication with a deafblind child, and discusses how this single subject case might inform research in this area (Parker, Davidson and Banda, 2007).

IMITATION AND THE SOCIAL BASIS OF LANGUAGE

Language emerges from social interaction between an infant and a caregiver (Vygotsky, 1962; Bruner, 1975a; Bruner 1975b; Vygotsky, 1978). In these early interactions, routines between adult and child establish expectations that support language development. Initially non-verbal patterns of turn-taking, shared attention and imitation (Bruner, 1983), these routines increase responsiveness of infants (Camaioni and Lacardi, 1985) and later support verbal communication. Repetitive sequences of interaction featuring nursery rhymes, songs or social games (such as ‘peek-a-boo’) are common, as are non-conventional routines that are particular to parent and child. Imitative sequences are a key part of these early interactions (Meltzoff and Moore, 1977), and support the recognition of intersubjectivity and the development of a ‘theory of mind’ (Obermann and Ramachandran, 2007). Such behaviours lay the ground-rules for conversational turns and align the social expectations of child and caregiver.

Imitation is a milestone in the development of symbolism or the abstract representation that underpins language (Bruce, 2005). Routines using imitation or repetition have been used to support communication with children with learning or communication disabilities and the ability to imitate is a recognised cognitive strength (Reilly and Senior, 2007). Wimpory, Hobson and Nash (2007) found that social routines involving self-repetition and imitation of the child (via actions or vocalisations) preceded periods of social engagement (e.g. eye contact) in children with autism (Dawson and Adams, 1984; Lewy and Dawson, 1992; Davies, Zeedyk, Walls, Betts and Parry, 2008; O’Neill et al., 2008). They found that actions that continue a child’s activity, rather than re-direct focus, are more effective (Wimpory et al., 2007). Nadel, Croué, Mattlinger, Canet, Hudelet, Lecuyer, and Martini (2000) found that an imitating adult had a notable and immediate effect on the behaviour of children with autism, and helped to form social expectations. There may be particular importance attached to the imitation of infants by their caregivers (Heyes, 2005, cited in McEwen, Happé, Bolton, Rijssdiik, Ronald, Dworzynski, and Plomin, 2007) a role assignment that is common when considering children with learning difficulties, i.e. they are they are more likely in such interactions to be imitated than to imitate (Davies, 2008). The child’s ability to imitate an adult is also informative and may predict language outcome in autistic children (Toth, Munson, Meltzoff and Dawson, 2006). Imitation is a key social precursor to language development. Initially non-verbal patterns of turn-taking, shared attention and imitation (Bruner, 1983), these routines increase responsiveness of infants (Camaioni and Lacardi, 1985) and later support verbal communication. Repetitive sequences of interaction featuring nursery rhymes, songs or social games (such as ‘peek-a-boo’) are common, as are non-conventional routines that are particular to parent and child. Imitative sequences are a key part of these early interactions (Meltzoff and Moore, 1977), and support the recognition of intersubjectivity and the development of a ‘theory of mind’ (Obermann and Ramachandran, 2007). Such behaviours lay the ground-rules for conversational turns and align the social expectations of child and caregiver.

The term ‘imitation’ generally refers to the movement of another or the “copy and movement of a model” (Heyes, 2005). Hart (2006) identifies four key functions: First, imitation attracts attention and formation of a joint dyadic space (immediate confidence-building effect). Second, it can signal a communication partner’s key social precursor to language development. Third, imitation provides a means of connecting potential for meaning and its capac potential for meaning. And fourth, imitation may arise from sensory deprivation or a danger that any repetitive behaviour may arise from sensory deprivation or a danger that any repetitive behaviour may arise from sensory deprivation.

Imitative sequences may utilise repetition to be constructive. Repetitive imitation sometimes associated with autism may arise from sensory deprivation or a danger that any repetitive behaviour may arise from sensory deprivation or a danger that any repetitive behaviour may arise from sensory deprivation.

Hart (2006) identifies four key functions: First, imitation attracts attention and formation of a joint dyadic space (immediate confidence-building effect). Second, it can signal a communication partner’s key social precursor to language development. Third, imitation provides a means of connecting potential for meaning and its capacity potential for meaning. And fourth, imitation may arise from sensory deprivation or a danger that any repetitive behaviour may arise from sensory deprivation.
The term ‘imitation’ generally refers to the reproduction from vision of a body movement of another or the “copying by an observer of a feature of the body movement of a model” (Heyes, 2001, p. 254). In the present paper, imitation is treated as a response which follows from a person’s behaviour, and which is broadly representative of the form or content of that behaviour. We note Caldwell’s (2006) distancing of the term ‘imitation’ from connotations of mimicry, and her suggestion of imitation as “learning the language of our partner, that is responding to whatever has meaning for them” (p. 277).

Hart (2006) identifies four key functions of imitation for the deafblind person. First, imitation attracts attention and supports interpersonal togetherness and the formation of a joint dyadic space (Radbroe and Souriau, 1999). Hart notes the immediate confidence-building effect of recognising a means of attracting the attention of a communication partner. Second, imitation stimulates turn-taking, a key social precursor to language development, in that the repetition of a behaviour by the partner leads to a turn-taking exchange. Third, imitation provides a way in which communication partners can recognise each other; responses to repetition and rituals can be used as a key to someone’s identity. Hart’s fourth function of imitation involves the recognition of a like-minded other in the communication partner, essentially promoting a ‘theory of mind’ and an appreciation of intersubjectivity (Nadel et al., 2000; Daelman, Janssen, Larsen, Nafstad, Radbroe, Souriau and Visser, 2004). Imitation provides a shared point of reference (Caldwell, 2006). In short, imitation can establish or cement a relationship by providing a means of connection and prompt recognition of a behaviour’s potential for meaning and its capacity to become referential. What may start out as a shared moment might form the basis for language.

Imitative sequences may utilise repetitive behaviours of a type sometimes thought to be unconstructive. Repetitive and disturbed behaviours similar to those sometimes associated with autism are observed in those who are deafblind and may arise from sensory deprivation (van Dijk, 1982; Breathnach, 1995). There is a danger that any repetitive behaviour might be perceived as maladaptive or stereotyped, when in fact some such behaviours may be utilised in, or indeed may
be attempts at communication. Some may be functionally equivalent behaviours, that is, behaviours which differ in form from conventional behaviours but which serve similar functions. The potential of such behaviours is recognised in some person who is performing it. Observers may fail to consider the functions served production should be considered (Murdoch, 1997; Murdoch, 2000). Judgements the frequency with which it occurs, and the outcomes associated with its contemporary strategies for the development of communication skills in deafblind children (McInnes and Treffrey, 1982; van Dijk, 1986; Nafstad and Rødbroe, 1999; Janssen, Riksen-Walraven and van Dijk, 2003). In differentiating a functionally equivalent behaviour from a stereotypy, the form of the behaviour, the frequency with which it occurs, and the outcomes associated with its production should be considered (Murdoch, 1997; Murdoch, 2000). Judgements of stereotypy are often based on the form of a behaviour and the perception of the person who is performing it. Observers may fail to consider the functions served for the person who is deafblind, as his or her perception of the behaviour and its impact on the environment may differ substantially from the perception of observers. In order for the communicative function of a behaviour to be appreciated by the deafblind person, the communication partner must be able to recognise that the behaviour could be communicative (Murdoch, 1997), as the following case study illustrates.

CASE STUDY: IMITATION OF A PERSEVERATIVE ROUTINE

Background

Amy¹ was twelve years of age at the start of the research study, which charted her development over the course of a year. She was adopted by an Irish family at the age of seven years having spent her early years in an overseas orphanage, where it is likely that she was deprived of stimulation. As a result of her premature birth, Amy has combined vision and hearing loss. The vision loss is near complete, but some residual hearing allows Amy to use hearing aids to hear some speech sounds. Amy can carry out some functional skills with assistance. She attends a special school for children with moderate to severe physical and learning disabilities. Amy uses a combination of various types of sign systems, including some Irish Sign Language (ISL), LAMH, deafblind manual, adaptive signs, and natural gestures. Amy has approximately twenty-five signs in her vocabulary. She uses a weekly schedule calendar system at school with a combination of miniature objects, cut-out representations, alphabet letters and Moon alphabet letters.

Amy’s Signing Routine

Several years ago, Amy’s parents and teachers noted her use of a short routine-like sequence of signs, which appeared not to be relevant to the current context. The sequence was initially topographically invariant (performed in the same way each time) and translated to: TEA-BISCUIT-LAMH or ISL with some adaptation. thirty to forty times a day, across a range of settings and functions of this routine and teachers. Amy’s mother and a teacher repeating the signs (verbally) as Amy allowed her to hear a verbal response routine progressed, Amy began to utilise the partner, waiting for someone to say the communication partner imitated verbal of this sign routine was documented over

Methodology

Over a period of one year, we made eleven visits lasting one to two days. On each documented Amy participating in a range of activities with her parents, teachers and other individuals. Activities at school were structured and formalised. A description of each video clip, some type of communicative exchange (tangible objects or reference) were transcribed. Relatively few clips were available for coding due to the small number of interactions and spontaneous use of the routine over a long period. January and September of 2007. On some occasions, the use was reported by the mother, when use of the routine decreased. A range of behaviours in and around the school was assessed. The transcriptions for accurate: ninety-nine per cent on the overall context ninety-one per cent agreement on the type

¹ Student name used in this article has been changed.
nally equivalent behaviours, national behaviours but which
vaviours is recognised in some
unication skills in deafblind
(1986; Nafstad and Redbroe.
03). In differentiating a
, the form of the behaviour;
comes associated with its
urdoch, 2000). Judgements
and the perception of the
consider the functions served
ition of the behaviour and its
ly from the perception of
ion of a behaviour to be
ation partner must be able to
ve (Murdoch, 1997), as the

IVE ROUTINE

rch study, which charted her
leted by an Irish family at the
seas orphanage, where it
suit of her premature birth,
loss is near complete, but
to hear some speech sounds.
ance. She attends a special
learning disabilities. Amy
cluding some Irish Sign
signs, and natural gestures.
abulary. She uses a weekly
 of miniature objects, parts
Moon alphabet letters.

r use of a short routine-like
to the current context. The
med in the same way each
time) and translated to: TEA-BISCUIT-TEA-BREAD-SWIMMING-OK; the signs were
LAMH or ISL with some adaptation. At one stage Amy produced this sequence
 thirty to forty times a day, across a range of contexts, at school and at home. The
possible value and functions of this routine were often discussed by her parents
and teachers. Amy’s mother and a teacher began to imitate the sign sequence by
repeating the signs (verbally) as Amy produced them (Amy’s residual hearing
allowed her to hear a verbal response to a sign). As use of this perseverative
routine progressed, Amy began to utilise verbal feedback from the communication
partner, waiting for someone to say the sign before she continued. In this way, the
communication partner imitated verbally what Amy had signed. The development
of this sign routine was documented over the course of a year.

Methodology

Over a period of one year, we made eleven visits to Amy’s home and school, each
visit lasting one to two days. On each day, several hours of video recording
documented Amy participating in a range of activities at home and at school, and
interacting with her parents, teachers and a special needs assistant (SNA). Activities
at school were structured and included a cooking class and art project. Activities
at home were informal and mainly involved interactions with her
mother. Approximately 200 pieces of video footage were collected over the study
period. A description of each video clip was documented and those containing
something of communicative exchange (e.g. use of gesture, sign language, or
tangible objects of reference) were transcribed for coding.

Relatively few clips were available for coding, as communicative behaviours were
relatively few, a common problem when conducting research with deafblind
children. Vervloed, van Dijk, Knoors and van Dijk (2006), examining interactions
between a congenitally deafblind child and his teacher, found that just two per
cent of recorded activities contained communicative behaviours that could be
coded, despite selecting (as we did here) activities that were likely to lead to
communicative interactions (e.g. playing and dressing). Forty-one clips
containing communicative behaviour were transcribed. Ten of these contained
spontaneous use of the repetitive routine. These ten clips were recorded between
January and September of 2007. On some visits the routine was not observed or
recorded, but its use was reported by the child’s teachers or parents until
September, when use of the routine decreased. Two experienced teachers for the
deafblind coded a range of behaviours in the video clips (including the routine)
and assessed the transcriptions for accuracy. Inter-rater agreement was high, at
ninety-nine per cent on the overall content of the clips (communicative/not) and
ninety-one per cent agreement on the types of behaviours presented.
FINDINGS AND DISCUSSION

Of the ten clips containing the routine (Table 1), seven were recorded at home (with her mother) and three at school (two involved a teacher and one involved an SNA). The number of signs exhibited increased over the ten clips, from six signs in the core sequence initially (Clip 1) to thirty-seven signs by Clip 6. These longer sequences do not involve thirty-seven distinct signs, rather there is repetition of segments with some new vocabulary added to the core routine. The basic or core routine consisted of five signs in a fixed sequence of six items (TEA-BISCUIT-TEA-BREAD-SWIMMING-OK). The starting core sequence of six signs grew to include eleven new signs, which were incorporated into Amy’s familiar sign routine. The repetitive routine therefore appeared to provide opportunities for Amy to practice using her sign vocabulary and it increased opportunities for new signs to be introduced.

Table 1: Signs exhibited across the one year period of the study

<table>
<thead>
<tr>
<th>Clip</th>
<th>Month</th>
<th>Location</th>
<th>Number of signs in sequence</th>
<th>Signs used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>January</td>
<td>Home</td>
<td>6</td>
<td>Core</td>
</tr>
<tr>
<td>2</td>
<td>January</td>
<td>Home</td>
<td>6</td>
<td>Core, CS</td>
</tr>
<tr>
<td>3</td>
<td>January</td>
<td>Home</td>
<td>7</td>
<td>Core, CR+</td>
</tr>
<tr>
<td>4</td>
<td>January</td>
<td>Home</td>
<td>9</td>
<td>Core, NV</td>
</tr>
<tr>
<td>5</td>
<td>February</td>
<td>School</td>
<td>5</td>
<td>CR-</td>
</tr>
<tr>
<td>6</td>
<td>February</td>
<td>School</td>
<td>37</td>
<td>Core, CS, CR+, NV, ST</td>
</tr>
<tr>
<td>7</td>
<td>April</td>
<td>School</td>
<td>24</td>
<td>Core, NV</td>
</tr>
<tr>
<td>8</td>
<td>April</td>
<td>Home</td>
<td>11</td>
<td>Core, CR+, NV, ST</td>
</tr>
<tr>
<td>9</td>
<td>May</td>
<td>Home</td>
<td>31</td>
<td>Core, CR+, NV, ST</td>
</tr>
<tr>
<td>10</td>
<td>September</td>
<td>Home</td>
<td>37</td>
<td>Core, CR+, NV, ST</td>
</tr>
</tbody>
</table>

Key: Core - the core 5 sign, 6 item sequence of the routine, CS - continues signing core sign (counted once only), CR+ - repeats a core sign, CR - core minus one of the signs, NV - new sign, ST - uses sentences

The eleven new signs that were introduced are LAMH or ISL signs (MILK, SLEEP, COFFEE, LOVE) and one adapted sign (C within the routine suggested a development occurs in early development of two-word and Coltheart, 1986), Amy’s sentences embedded within the sign routine. For (pivot) followed by one of a number of (for instance; MUMMY, DADDY, TEA, SWIMMING repetitions of the core routine include: I LOVE SWIMMING; MUMMY-AMY-SWIMMING.

For Amy, the repetitive sign routine provided particularly meaningful. The rapport and partner are salient to her. Amy’s mother observed that she produces an appropriately timed, core factors in successful interactions identified by Causey and Guess, 1989) in research on deafblind children.

While the sign sequence may initially have reflexive act or stereotype, over time it can provide opportunities for advancement in the production of two to three words, device for the development of pragmatic and to maintain ongoing conversation, to stimuli 2005; Hart, 2006). The use of the routine as a functions of repetitive behaviours as identified in the child’s skills and interests, fine-tuning the adult and providing a shared social expen...
The eleven new signs that were introduced and made their way into Amy’s routine are LAMH or ISL signs (MILK, SLEEP, CHEST, NOSE, MUMMY, DADDY, I, SHOWER, COFFEE, LOVE) and one adapted sign (CHANGE-CLOTHES). Three word sentences within the routine suggested a developing grammar within Amy’s signing. As occurs in early development of two-word utterances (Braine, 1963, cited in Harris and Coleheart, 1986), Amy’s sentences contained a pivot-open type grammar embedded within the sign routine. For example, she used the phrase “I love” (pivot) followed by one of a number of (open) nouns (all the things she loves, for instance; MUMMY, DADDY, TEA, SWIMMING). In Clips 8 to 10, signs embedded in repetitions of the core routine include: I LOVE MUMMY; I LOVE DADDY; I LOVE TEA; I LOVE SWIMMING; MUMMY-AMY-SWIMMING; DADDY-AMY-SWIMMING.

For Amy, the repetitive sign routine prompted interactions based on imitation. Particularly when using the routine with her mother, Amy seemed to be using it as a ritual to introduce an imitative interaction. She began to sign the sequence until she got her mother’s attention and she waited on her mother’s imitative response to each sign before continuing with the sequence. In one clip, her mother mistranslated one of the signs. Amy re-signed it until her mother said it correctly, and it was only when she had that response that she continued with her routine. This repetition of the sign until it is understood would seem to provide evidence of intentionality (Bruce, 2005), as well as flexibility to adjust responses within the routine. Amy wants to be understood, even if, at this stage, the sequence of signs is not in and of itself particularly meaningful. The rapport and the responsiveness of her communication partner are salient to her. Amy’s mother shows sensitivity to Amy’s behaviour, and she produces an appropriately timed, contingent and predictable response, key factors in successful interactions identified by Siegel-Causey and colleagues (Siegel-Causey and Guess, 1989) in research on interactions between mothers and their deafblind children.

While the sign sequence may initially have appeared to be little more than a reflexive act or stereotype, over time it acquired a function. The repetitive routine provided opportunities for advancement to more symbolic communication by assisting the production of two to three word sentences. It may also serve as a device for the development of pragmatic or social skills, helping to cultivate and maintain ongoing conversation, to stimulate turn-taking, and so forth (Bruce, 2005; Hart, 2006). The use of the routine would seem to have fulfilled three functions of repetitive behaviours as identified by Murdoch (1997) by exercising the child’s skills and interests, fine-tuning the behaviour through feedback from the adult and providing a shared social experience.
CONCLUSION

Although the reported case is atypical in that Amy has residual hearing and can benefit from verbal feedback, the heterogeneity among individuals with deafblindness suggests the findings might have wider application. Imitation rituals may be usefully employed in communication strategies for deafblind children and are not necessarily maladaptive stereotypes as sometimes suggested. Imitation of extant behaviours or routines can be useful to initiate a communicative exchange and may lead to, or further, development of language. In this case, encouragement of an apparently stereotypic routine aided fluency, providing an opportunity to practise vocabulary and grammar. If this inclination towards repetitive sequences can be harnessed in a productive way, it has the potential to facilitate meaningful interactions. However, there is also a need to identify unconstructive repetitive behaviours, as without the introduction of novel responses, such routines will not provide a connection with others or promote an interest in 'otherness' (Caldwell, 2006).

REFERENCES


Ephraim, G. (1986) A Brief Introduction to Language, Harpreby Hospital School, I


residual hearing and can benefit individuals with deafblindness. Imitation rituals may be usefully observed in children and are not necessarily confined to extant behaviours or exchange and may lead to, or encourage, a new way to practise vocabulary and sentences. It can be harnessed in meaningful interactions. However, the specific behaviours, as without the help of these connections, do not provide a connection with


JOIN IATSE

Irish Association of Teachers in Special Education

Membership form and details from:
Membership Secretary,
IATSE, Drumcondra Education Centre, Dublin 9
or
www.iatse.ie

REACH Journal of Special Needs Education

Developing a Whole Including Children with Spectrum Disorders Primary School

The process of including children: mainstream classrooms is an ongoing article the author explores an approach in the process of inclusion while attending a pupil on the autistic spectrum.

Ian Scott is a teacher in an autism unit.

INTRODUCTION

In the context of educational provision, expectation that students with special education needs alongside their peers in mainstream education be seen as a normative practice. The concept of ‘inclusion’ has highlighted many important issues on implementing inclusion strategies (Day, 2008). This article considers this approach which promotes, guides and enhances children with autistic spectrum disorders.

CONTEXT


Inclusion ideally promotes the same responsibilities for all, in a barrier...