THE IMPACT OF LEISURE OPTIONS ON THE FREQUENCY AND SPONTANEOUS COMMUNICATION PRODUCTION OF A YOUNG CHILD WITH MULTIPLE DISABILITIES

Jeffrey B. Chan and Deborah T. May

Introduction

It is largely agreed that society adheres to and strongly promotes the integration of people with an intellectual disability. However when discussing integration, much of the research has focused on promoting work-related and self-help skills (Adkins and Matson, 1980; Cheseldine and Jeffree, 1981). Whilst arguably these skills are necessary for people to function in integrated settings, it is important to consider what they do and how they function in their free time. Therefore, access to leisure options is an integral part in the overall evaluation of quality of life for people with an intellectual disability (Hogg, 1993).

Participation in leisure and recreation may differentially influence a person’s quality of life. As Hogg (1993) outlined, leisure engagement moves according to levels of participation and creativity. So a person may be engaging in leisure for “killing time” as opposed to “active participation”. When leisure is used to fill time, the person has not been allowed the opportunity for self-creativity and autonomous choice-making. Therefore, to ensure active participation, one key element must exist, that of choice-making.

The opportunity to make choices increases personal autonomy, enhances self-perception and dignity, and is highly valued by society in general (Guess et al., 1985; Houghton et al., 1987). Research has shown that the ability and opportunity to express choices has been successful in decreasing challenging behaviours and increasing socially appropriate behaviours (Dunlap et al., 1994; Dyer et al., 1990; Forster-Johnson et al., 1994; Sigafoos et al., 1994). Leisure choices have also been found to be effective in promoting spontaneous verbal behaviour. Dyer (1989) found that spontaneous verbal requests by her subjects with autism were higher when
they were provided with preferred materials than when they were provided with non-preferred materials.

Research in the area of leisure has predominantly centred on school-aged children, adolescents and adults (Nietupski et al., 1983; Neumayer et al., 1993; Jeffree and Cheseldine, 1984). Those studies which have addressed leisure for children considered leisure as being the development of play skills (Nietupski et al., 1983; Jeffree and Cheseldine, 1984). There is a paucity of research in the use of leisure options with young children with disabilities and its usefulness in promoting communication development.

How choices are offered to access leisure requires further investigation. Dattilo and Mirenda (1987) highlighted the need to adapt the environment to allow effective choice-making for people with severe disabilities. They found that through using switch-activated microcomputer and associated software, a person’s hierarchy of leisure preferences could be identified. Once preferred activities are identified, several other factors need consideration. For example, Cheseldine and Jeffree (1981) suggested that the choices of leisure offered should not be under the influence of the caregiver, and that the leisure activities selected commensurate with the person’s age and yet be appropriate with chronological age (Cheseldine and Jeffree, 1981). Another factor to consider is the notion of peer preferences within the leisure activities; that is, people with disabilities may prefer recreational activities in order to be with their peers in segregated groups than in integrated settings (Neumayer et al., 1993).

An area of increased investigation is how caregivers respond to the leisure options of persons with disabilities according to the communicative means used to make the choice (Guess et al., 1985; Houghton, et al., 1987). Houghton et al. (1987) found that staff in an educational setting responded at extremely low rates to student-initiated expressions of choice. They attributed the low rates of response to staff failure to recognise the choices being expressed by the students. They found that staff typically responded to students’ verbal expressions and use of communication boards, but these were rarely used to make choices, instead the vast majority of student-initiated choices were made through body movements and social affective responses such as smiling.

These studies highlight that communication occurs through a variety of modalities. Communication is enhanced when the person with disabilities is provided with a multimodal communication system. The ability to make choices enhances the communication development in people with disabilities (Guess et al., 1985). The use of leisure also further promotes communication intervention towards integrated functionally relevant communication skills (Mirenda et al., 1990).

There is a paucity of research however into the impact of leisure access on the communication development and communicative competency of young children with intellectual disability. Questions remain as to how leisure participation will effect communicative opportunities and competency. Accessing leisure through choice-making is certainly a start in the right direction. This descriptive study was conducted to address some of these issues.

First, the study set out to examine the impact of leisure options (and choice-making) on the communication development of a young child with severe multiple disabilities. A second aim was to investigate how the implementation of a multimodal communication system would influence the type and number of communicative attempts across leisure activities.
Method

Subject

The subject (Aaron) was a 4 year old boy with severe multiple disabilities and who has been diagnosed with neurofibromatosis. Neurofibromatosis is a genetic disorder characterised by tumours usually present on the skin or internal organs (North, 1993). Aaron presented with many associative characteristics of neurofibromatosis, including a neuroma in the head and neck region, severe scoliosis, visual difficulties and some hearing loss. He was prescribed spectacles to correct his vision. The degree of his hearing loss was difficult to ascertain. He also had a tracheostomy which required frequent suctioning and was fed via a gastrostomy. Aaron was seated in a wheelchair with a specially designed insert. He used his left hand to point and gesture, his right hand was not used functionally. His use of the left hand was also noted to be weak at times.

Based on the Vineland Adaptive Behaviour Scale (Sparrow et al., 1984), Aaron’s receptive language was at a 17 month level and his expressive language at a 16 month level. Prior to this study, Aaron had received speech-language therapy in the use of Compic symbols (computer generated pictographs developed by The Spastic Society of Victoria, Australia), which he accessed by eye gaze and pointing. His mother was also trained on the use of a multimodal Augmentative and Alternative Communication (AAC) system, ideas about child-directed activities, and incidental teaching procedures such as modelling, time delay and mand-model. However, this initial therapy did not translate into meaningful gains for Aaron.

Review Assessment

A review assessment of Aaron’s communicative behaviours was conducted at home and at a hospital Day Care Centre where he attended. The review assessment revealed that Aaron mainly used the following means of communication: gestures (reaching, pointing, wave bye-bye); word approximation for “more”, Australasian sign for “more” (Jeanes et al., 1993), vocalisations, and facial expressions (frown, smile). He was provided with some Compic symbols which were specific to his play activities, such as toy cars, blocks and blow bubbles. He used the above communication means to initiate request (for example, by signing “more”); to direct attention to self (for example, vocalising and eye gaze); direct attention to object (for example, by vocalising and pointing); initiate interaction by eye gaze, vocalisation and gesturing; to greet and farewell; and to protest by frowning and vocalisation.

Selection of Leisure Options

His mother and the Day Care Centre teacher were consulted in the planning of his leisure options. Several factors needed consideration when selecting leisure options for Aaron, such as Aaron’s personal preferences, his age, his medical needs, wheelchair access for outdoor leisure, and his mother’s work schedule. An important consideration was his medical needs: Aaron required regular suctioning of his trachea, the suctioning machine had to be in close proximity to him; this was problematic when considering outdoor leisure activities. In discussion with his mother and teacher, Aaron’s preferences for certain activities were identified and included in the leisure options for the study.
TABLE I
Breakdown of leisure options by session

<table>
<thead>
<tr>
<th>Session</th>
<th>Leisure Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>book reading and nursery rhymes</td>
</tr>
<tr>
<td>2.</td>
<td>grocery shopping</td>
</tr>
<tr>
<td>3.</td>
<td>feeding ducks</td>
</tr>
<tr>
<td>4.</td>
<td>shopping at Target</td>
</tr>
<tr>
<td>5.</td>
<td>book reading and nursery rhymes</td>
</tr>
<tr>
<td>6.</td>
<td>grocery shopping</td>
</tr>
<tr>
<td>7.</td>
<td>nursery rhymes and playing with toy cars</td>
</tr>
<tr>
<td>8.</td>
<td>book reading and nursery rhymes</td>
</tr>
<tr>
<td>9.</td>
<td>shopping at Target</td>
</tr>
<tr>
<td>10.</td>
<td>feeding ducks</td>
</tr>
<tr>
<td>11.</td>
<td>visit to the zoo</td>
</tr>
<tr>
<td>12.</td>
<td>nursery rhymes and book reading</td>
</tr>
</tbody>
</table>

TABLE I lists the leisure options that were used during each intervention session.

The leisure options consisted of both indoor and outdoor activities. The indoor activities included book reading, nursery rhymes and playing with toy cars. Nursery rhyme leisure activity was singing to nursery tunes on an audiotape. Outdoor activities included feeding ducks at a nearby park, shopping at “Target” (a local department store), grocery shopping and a visit to the zoo. During the outdoor activities, it was ensured that Aaron’s suction machine was in close proximity. He was also suctioned immediately prior to starting the outdoor activity.

Intervention Procedure

Compic symbols of most of the leisure options were pasted on 9cm by 12cm flashcards. The exception was the use of the logo of the local departmental store “Target” which was cut out from the store brochure and pasted on a similar flashcard. At the beginning of each session, Aaron was presented with a binary choice of leisure activities. The leisure options were selected at random.

Compic symbols were used for the selected vocabulary pertaining to each leisure activity. For the indoor activity, Compic symbols were placed on an eye gaze board instead of being on a wheelchair tray for direct access because there was some technical difficulty with his wheelchair. For the outdoor activity, the Compic symbols were pasted on a felt fabric apron which the investigator wore when interacting with Aaron. He accessed the Compic symbols by eye gaze and pointing (or a combination of both).

It is important to mention that during the course of using leisure options as an intervention procedure, the strategies as described earlier (e.g., incidental teaching) that the mother had been trained in were reiterated and demonstrated again. As such, the strategies were not part of the current intervention plan but part of the skills she had gained previously.

At the start of each session, two leisure options (on flashcards) were randomly selected and presented to Aaron. He was then asked by either the clinician (the first
author) or his mother about his choice of leisure, for example ‘Aaron want to ‘feed ducks’ (flashcard) or go shopping (‘Target’ flashcard)?’ The flashcards were presented close to him by which he then accessed by pointing and/or by eye gaze (or both).

If an outdoor leisure option was chosen, the clinician or mother wore the apron with the Compic symbols and interacted with Aaron naturally based on aided language stimulation techniques (Goosens et al., 1992). For example, he was asked, “What do we need when we go out?” (pause) and/or he was provided with a model, such as “Look! I have my hat (sign) and sunnies (individualised gesture). What do you need?” Aaron’s mother participated in all the sessions. Initially she observed the clinician working with Aaron. Towards the later part of the sessions, she took the lead in the intervention and was supported by the clinician only when requested.

Twelve sessions of leisure activities were conducted over a three month period. There was a three-week break between sessions 7 and 8 as Aaron was admitted to hospital. In general, the sessions ranged from 40-60 minutes in duration, depending on the type of leisure activity. The average time period for the leisure activities was 40 minutes.

Data Collection

Prompted and spontaneous vocalisations, word approximations and words, signs, sign approximations, gestures, facial expressions and use of Compic symbols were recorded on-line. However for the purposes of discussion of the results in the study, the following communication modalities were analysed: signs and sign approximations, words and word approximations, gestures, and Compic symbols. Prompted responses were Aaron’s responses that followed the mother’s or clinicians prompt. Spontaneous responses were responses that were self-initiated by Aaron without any preceding instructional cue (Sigafos and Reichle, 1993). The outdoor sessions were not videotaped because Aaron’s mother was not comfortable with the idea. A twenty minute videotaped session of an indoor activity was carried out for coding reliability agreement using a Canon 8mm videocamcorder E60. Coding reliability to determine communicative modalities and prompted/spontaneous responses carried out by the authors were 98%.

Results

FIGURE 1 shows the total of all the communication modalities (gestures, signs and sign approximations, word and word approximations, Compic symbols) produced with prompting and produced spontaneously. The data show a general trend of improvement in Aaron’s communication. Overall spontaneous communication increased markedly for each leisure activity and when the leisure activity was repeated (see TABLE I).

Sessions 8, 9 and 11 appeared to have most impact on the frequency of the child’s communication attempts; with scores of 129, 111 and 138 for combined prompted and spontaneous productions. Spontaneous production at each of these leisure sessions were 66 for sessions 8, 78 for 9 and 100 for session 11. The leisure options that appeared to have had most impact on the child’s frequency of communicative attempts based on total scores were outdoor activities: a visit to “Target” shopping centre (session 9) and a visit to the zoo (session 11).
Session 9 (shopping at "Target") was a repeat leisure activity, the same activity was conducted at session 4. There was a significant increase in the number of spontaneous productions, from 8 spontaneous productions in session 4 to 78 spontaneous productions in session 9. An increase in spontaneous productions was also noted in the following leisure activities that were repeated: sessions 3 and 10 (feed ducks activity) from 10 spontaneous productions at sessions 3 to 55 spontaneous productions at session 10. The indoor leisure activity of book reading, nursery songs and play toy cars resulted in an increase from 2 spontaneous productions at session 1 to 66 and 65 spontaneous productions at sessions 8 and 12 respectively.

Not all leisure activities seemed to have had an impact on the frequency of the child’s communicative productions. The leisure activity that seemed to have made least impact in terms of spontaneous productions was “grocery shopping” with mother, there were 10 spontaneous productions during session 2 and 9 spontaneous productions at session 6. There was some progress in terms of prompted productions, with 35 prompted productions at session 2 increasing to 61 prompted productions at session 6.

In FIGURE 2 are shown the various communication modalities used in prompted and spontaneous productions. The communication modalities were gestures, signs and sign approximations, words and word approximations, and use of Compic symbols.

The child’s use of spontaneous gestures increased steadily from session 8 onwards. In session 9 (visit to “Target”) and 11 (visit to the zoo) there were 28 spontaneous productions at each leisure activity. There was a dramatic increase in the use of gestures in the visit to “Target” leisure activity (session 4 showed 4 spontaneous gestural productions compared to session 9 which showed 28 spontaneous productions).
FIGURE 2
Breakdown of Communication Modalities into Spontaneous and Prompted Productions

Number of gestures

Number of signs

Number of words

Number of symbols

Session

Prompted
Spontaneous

Prompted
Spontaneous

Prompted
Spontaneous

Prompted
Spontaneous
There were 19 spontaneous productions of gestures at session 8. Session 8 was an indoor activity of book reading and nursery songs which was a repeat activity of session 5 which shows only 1 spontaneous gesture production. Session 10 was also a repeated outdoor activity of feeding ducks at a park; compared to the first time Aaron visited the park there was a marked increase from 6 spontaneous gesture productions to 15 spontaneous gestures at session 10. Therefore, there was a marked increase in the number of spontaneous gesture production across leisure activities and at the repeat of the same activity.

It was noted that Aaron developed his own gestures, for example, “left index finger flicking at the nose” and “left index finger pointing in up/down motion”. These gestures were noted during the course of the study. Contextual analysis after a few weeks of observations revealed that the first individualised gesture indicated “funny” or similar meaning. Evidence was provided in several incidences which confirmed the meaning of the gesture. For example, when the child saw some ducks waddling out from a lake and shaking their tails, he turned towards the investigator (the first author), grinned broadly and produced the gesture. On another occasion, on a visit to the zoo the child looked and pointed at zebras, turned to the first author, laughed and produced the gesture. On both occasions, the investigator responded with “Yes, it's funny!”

Aaron produced the gesture when the word “funny” was used. The other individualised gesture indicated “music” or nursery songs leisure choice. The gesture was produced in imitation of the investigator pushing the “play” button on the audiotape recorder. Clinical observations and parental report have also noted that Aaron has learned to use the same gesture to request singing of nursery rhymes. The above examples highlighted the importance of close observation of gestures and/or body movements produced by children with multiple disabilities since these may have communicative functions.

Compic symbols were introduced primarily as a choice-making strategy but were expanded to include possible core vocabulary for each leisure activity. There were problems with the child's tray and insert during the intervention period which made it difficult for the investigators to put a Compic symbol communication display in the tray. As a result, the child did not have independent and available access to the Compic symbols. The child was able to access Compic symbols only when the investigator or the mother wore the apron with Compic symbols pasted on it. Spontaneous use of Compic symbols on the apron was indicated by eye gaze and pointing.

Sign and sign approximation production mostly occurred in indoor leisure. There were 36 and 28 spontaneous productions in sessions 8 and 12 respectively. However, closer examination revealed that most of the productions during those sessions were requests for recurrence with the sign for “more”.

Discussion

The results of the descriptive study demonstrated increases in frequency and spontaneous communicative productions with the provision and participation in leisure options. The results showed increases in spontaneous productions and in the variety of words used. At the initial session, Aaron mainly used a sign approximation for “more” to request for repetition of preferred activities. As the intervention progressed, he used a variety of words, such as action words (e.g. drink, open,
read), object labelling (e.g. dog, car, book), descriptive words (e.g. little), an interrogative (e.g., what), greetings (bye-bye, hi), and commands (e.g., stop, no more). These results are congruent with previous studies which have shown that leisure participation promotes communication skills that are functional in the integrated environment (Mirenda et al., 1990), and that persons with severe communication impairment use a variety of communicative modalities to indicate their needs and knowledge.

The data showed a general trend of increased communicative attempts by Aaron during intervention. Communicative competence is essentially indicated by spontaneous productions, and as Sigafoos and Reichle (1993) discussed, that spontaneity is often lacking in the communicative repertoires taught to learners with developmental disabilities. This lack of spontaneity may stem from communicative behaviours being under the control of persons or objects. Offering Aaron a binary choice of leisure activities was, in a sense, giving him some control over his leisure. By teaching Aaron's mother to recognise and respond to his communication attempts, Aaron seemed to have control of the environment and this may have motivated him to communicate.

Certain leisure options generated increased spontaneous productions, while others did not. Several reasons may explain the discrepancy between for example, a visit to “Target” department store (high level of spontaneous production) and grocery shopping (low level of spontaneous production). The nature of the leisure option (e.g. “Target” shopping) either provided more opportunities for interaction between Aaron and his mother or it did not (e.g., grocery shopping). In the grocery shopping activity, Aaron’s mother had a specific shopping list and the nature of the activity (that is, grocery shopping) is normally busy, in terms of searching for items and standing in queues. As such, the activity of grocery shopping limited interaction between Aaron and his mother. In comparison, the leisure option of shopping at “Target” provided more opportunities for interaction between mother and the child because the purpose of shopping was to purchase a toy, a book or clothes for Aaron. As such, the nature of the leisure activity allowed for choice-making and communicative interaction between the child and his mother. The nature of the activity also allowed Aaron and his mother to take their time to browse through the items before deciding on a purchase, hence increasing the likelihood of further conversational interaction. It was also observed by the investigator that shopping at “Target” was at a slower pace following a set routine with familiar vendors involved. This comparison is consistent with the hypothesis proposed by Hogg (1993), where the child was provided with the opportunity for choice-making, greater levels of participation and communicative variation were evidenced.

In addition to “Target” shopping, other outdoor activities were associated with increased communicative attempts with higher levels of overall spontaneous productions produced. Spontaneous productions were in evidence across communicative modalities. For example, the child produced a greater number of word variations, verbal word attempts and use of gestures.

In contrast, sign and sign approximations mostly occurred in indoor leisure activities. It is thus clearly demonstrated that the type of leisure activity greatly influenced the type of communicative modality used, its effectiveness and communicative function. The study thus indicated a need for caution when selecting leisure
activities to be offered as a choice (Cheseldine and Jeffree, 1981). It is necessary to consider a range of leisure options to allow for preferences to be expressed (Dattilo and Mirenda, 1987).

With the repetition of leisure activities, the child’s communicative productions subsequently increased. A greater use of both prompted and spontaneous self-initiated productions highlighted the importance of activity repetition to encourage communicative development and competence. Repetition of leisure activity leads to familiarisation of the learner with the routine and communicative demands of the activity.

The use of a multimodal communication system in the study was important as it allowed for choices, indicating that certain modalities were the preferred communication choice in specific situations for the child in the study. The results are congruent with Iacono et al.’s (1993) study that communication is enhanced when the person with severe communication impairment is provided with a multimodal communication system.

Consultation with the caregiver of the individual with disabilities is necessary when planning leisure options for them. Several factors were considered when intervention was planned for Aaron. First, Aaron’s preferences were considered and that the activities should be age-appropriate. Secondly, in Aaron’s situation, his medical condition was a significant consideration when planning outdoor leisure options. Thirdly, his mother’s usual routine or her preference on how she wanted to spend her time with Aaron was also considered. Fourthly, environmental concerns such as wheelchair access, car parking and toileting convenience for people with disabilities were considered when deciding outdoor activities.

In conclusion, the findings of the descriptive study adds to the current literature of the impact leisure options can have on the communicative production of persons with disabilities. The use of leisure options to enhance the communication development and communicative competency of people with disabilities should be encouraged. In this study it was noted that the levels of communicative interaction might be influenced by the type of leisure option used. Repetition of the leisure activity and offer of choice of leisure activities were found to be useful in enhancing the spontaneous productions of the child in the study. The type of communicative modality used may also be influenced by the leisure option offered. Given the nature of the intervention, we are unable to suggest that leisure options directly resulted in increased spontaneous productions. The study did not control for the fact that his mother had received prior training in language intervention strategies and these strategies were reiterated during the course of the intervention. However, these same strategies did not appear to have an effect in the initial therapy provided previously.

Although the study has its limitations, the findings of this study highlighted the usefulness of leisure options as a clinical intervention procedure. There is also a paucity of research in the use of leisure options with young children with disabilities. The findings indicate that the merits of leisure options as an intervention procedure to promote the communication development of young children with disabilities deserve further investigation.
Summary

Leisure options were used to facilitate the communication development of a young child with severe multiple disabilities who used augmentative communication. The intervention consisted of selecting a number of leisure options through consultation with the child’s mother and teacher about the child’s leisure preferences and making available the leisure options at each intervention session. Twelve intervention sessions were carried out over a three month period. The results of this descriptive study showed that with the introduction of leisure options as part of intervention, the child demonstrated increased vocalisations, words and word approximations, communicative gestures and use of signs. The child also showed an increased desire to communicate. The findings indicate the usefulness and efficacy of leisure options as a potential intervention procedure in promoting the communication development of children with disabilities.

Acknowledgement

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References


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