Assessing pragmatic communication in children with Down syndrome

Liz Smith¹, Kari-Anne Næss², Chris Jarrold¹

University of Bristol¹, University of Oslo²
Communication

- The ability to communicate effectively has a positive impact on children’s peer relationships and self-esteem (Hartup, 1983).

- If children have difficulties with communication it can therefore have a considerable negative impact upon their development (Hadley & Rice, 1991; Rice, Sell & Hadley, 1991).

- Communication difficulties are often observed in children who have developmental disabilities (Geurts & Embrechts, 2008; Laws & Bishop, 2003).
Down syndrome

- Individuals with Down syndrome are known to experience communication difficulties associated with language, in particular expressive language difficulties (Chapman, 1997).

- However, much less is known about their pragmatic communication skills, i.e., whether or not young children with Down syndrome experience particular pragmatic strengths or difficulties, and if so why this may be.
Pragmatics

- Pragmatics: Language Use
- Understanding when it is appropriate to express a particular message. Interpreting what is appropriate or inappropriate verbal/nonverbal language use depending upon the context one is in.
- Pragmatics involves abilities such as understanding when and how to initiate a conversation, knowing how much to tell somebody, giving appropriate eye contact levels, understanding irony and non-literal language use.
Example (from Bishop, 1997)

- ‘The fish is on the table!’

Uncover speakers intended message based on context…
e.g., The food is ready, we are having fish and it is on a plate on the table…come and eat it
Aim of study

• The aim of this study was to explore the pragmatic profile in young children (Aged 6 years) with Down syndrome, to assess whether there is a consistent pattern of strengths and weaknesses early on in childhood.

• Additionally, we tested whether other factors were related to particular components of pragmatics in these children.
Such findings can inform the directions of training and teaching approaches to support pragmatic abilities and communication more generally in this group of children, from a young age.
Children’s communication checklist

• The children’s communication checklist (CCC-2; Bishop, 2003) was used to assess pragmatic communication.

• Parents rate the frequency with which different behaviours are observed in their child (behaviours associated with various aspects of communication, including pragmatics)

• Frequency ratings are given from 0-3

0 = less than once a week, 1 = at least once a week, 2 = once or twice a day, 3 = several times a day
Children’s communication checklist

- Four subscales of the CCC-2 assess pragmatics:
  - Inappropriate initiation
  - Scripted language
  - Understanding of Context
  - Nonverbal communication:
Inappropriate Initiation

Example: Talking too much to people
**Scripted Language**

Example: Repeating a phrase when it is not appropriate

- 'What did you do at School today?'
- 'What did you do at School today'
Understanding context

Example: Misinterpretation of sentence when word used in non-typical context

‘She was a bit cold?’

‘Like an ice lolly?’
Nonverbal communication

Example: Not recognising when somebody's facial expression is sad or happy
Children’s communication checklist

• Also assesses:
Speech, Syntax, Semantics, Coherence, Social relations, Interests

• Parental report measure – particularly useful approach to assess pragmatics

(nicely explained in a paper by Dorothy bishop (Bishop, 1998) who designed the checklist for this very reason)
Relations between pragmatics and other areas

- We explored correlations among the pragmatic subscales with each of the linguistic subscales.
- We also explored 3 other factors that we hypothesised may be related to certain components of pragmatic communication:
  - Vocabulary
  - Nonverbal ability
  - Social functioning
Expressive & Receptive tests

BPVS II (Dunn, Dunn, Whetton & Burley, 1997/Lyster, Horn, & Rygvold, 2010)

Picture naming subtest of Wechsler preschool and primary scale of intelligence (WPPSI III; Wechsler, 2002)

-May be related to the extent of inappropriate initiation
-May be related to nonverbal communication (Mundy et al. 1988)
• Block design subtest from the WPPSI III, Wechsler, 2002

-May be related to nonverbal communication
• Strengths & Difficulties questionnaire (SDQ; Goodman, 1997)


- May be related to inappropriate initiation and context, through increased opportunities for social experiences
Participants

• 43 children with Down syndrome (participating in a wider Norwegian study – a cohort)
• 29 of the children could use sentences (Criteria for CCC-2)
• Norwegian version of the CCC-2 distributed to parents
• All children aged 6 years.
Results: Scores scaled based on norms for chronological age (TD mean = 10)
Results: Scores scaled based on norms for mental age
(TD mean = 10)
Some specific strengths:

No children were rated as having difficulties involving having a blank expression in a situation when you would expect them to show a clear facial expression (e.g., happiness or anger), with all parents selecting 0 (less than once a week/never).

Likewise, 24 of the 29 children in the current sample were reported to show virtually no (i.e., 0 rating) problems recognising when other people are upset or angry.

Children with DS very rarely pronounced words in an over precise manner (Q.23) or provided over-precise information in response to questions (Q.42). All but 3 children were rated as 0 for these two behaviours.
Relationship between pragmatics and the linguistic subscales of the CCC-2

<table>
<thead>
<tr>
<th></th>
<th>Initiation</th>
<th>Scripted Language</th>
<th>Context</th>
<th>Non-verbal Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td>-.021</td>
<td>.109</td>
<td>.271</td>
<td>.064</td>
</tr>
<tr>
<td>Syntax</td>
<td>.149</td>
<td>.220</td>
<td>.468*</td>
<td>.037</td>
</tr>
<tr>
<td>Semantics</td>
<td>.025</td>
<td>.522*</td>
<td>.377*</td>
<td>-.137</td>
</tr>
<tr>
<td>Coherence</td>
<td>.271</td>
<td>.578*</td>
<td>.375*</td>
<td>.045</td>
</tr>
</tbody>
</table>

* = Significant at $p < .05$
# Relationship between pragmatics and vocabulary, nonverbal ability and social functioning

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<thead>
<tr>
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<th>Nonverbal communication</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expressive vocabulary</strong></td>
<td>-.304</td>
<td>.272</td>
<td>.170</td>
<td>-.116</td>
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<tr>
<td><strong>Receptive vocabulary</strong></td>
<td>-.024</td>
<td>.296</td>
<td>-.065</td>
<td>-.383*</td>
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<tr>
<td><strong>Nonverbal ability</strong></td>
<td>-.249</td>
<td>-.002</td>
<td>-.079</td>
<td>-.200</td>
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<td><strong>PEDI</strong></td>
<td>-.062</td>
<td>.155</td>
<td>-.308</td>
<td>.053</td>
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<td><strong>SDQ</strong></td>
<td>-.429*</td>
<td>-.400*</td>
<td>-.294</td>
<td>-.061</td>
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<tr>
<td><strong>SDQ pro social</strong></td>
<td>.185</td>
<td>.177</td>
<td>.335</td>
<td>.108</td>
</tr>
</tbody>
</table>

* = Significant at p < .05
Correlations involving social functioning

Children with more social functioning difficulties score lower on the inappropriate initiation subscale. Reflecting difficulties for this subscale, i.e., MORE instances of inappropriate initiation.
Correlations involving social functioning

Children with more social functioning difficulties also score lower on the scripted language subscale. Reflecting difficulties for this subscale, i.e., MORE instances of scripted language.

Note: similar pattern for context.
Correlations

- Nonverbal communication was not related to SDQ, however, there was a significant negative correlation between nonverbal communication and receptive vocabulary.
- Children with better receptive vocabulary were rated as poorer for the nonverbal communication subscale. This was unexpected.
- It may be that children with poor vocabulary compensate with nonverbal language skills, or children who struggle with nonverbal communication rely on verbal information and attend to verbal information.
Summary

- Pragmatic ability in young children with Down syndrome is a strength relative to language content and form.
- But pragmatics was not in line with chronological age, or nonverbal mental age norms, for the areas assessed in these six year olds.
- Profile of relative pragmatic strengths and weaknesses: Understanding of context appears to be particularly difficult for children with Down syndrome.
- Nonverbal communication was a relative strength.
Summary

• Scores on the SDQ were correlated significantly with the initiation and scripted language pragmatic subscales

• SDQ involves:
  Conduct, Emotion, Peer relations, Hyperactivity – these areas therefore appear to be related to pragmatics in Down syndrome

• Pattern regarding SDQ in same direction for understanding of context, but not reaching significance.
Conclusions

• Pragmatics is a key part of communication; addressing pragmatic skills should be a component of children’s education in addition to other aspects of communication such as language content and form

• Young children with Down syndrome would benefit from pragmatic support since their pragmatic abilities are not in line with their mental age

• Supporting social functioning, specifically children’s conduct, emotions, attention and peer relationships may be particularly useful in enhancing pragmatic communication abilities in children with Down syndrome early on in their development
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References


