Valid and authentic assessment for students in speech and language therapy simulation clinics

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Outline of presentation

• Background to simulation and standardised patients
• Background to assessment
• Study 1
• Study 2
• Discussion
• Conclusions and future directions
Background: Simulation
Benefits of simulation

- Safe learning environment
- Guaranteed exposure to particular experiences
- Non-technical skills training
- Massed and varied repetition
- Confidence building
- Reflective learning practice
- Additional placement opportunities

Bradley, 2006; Hill et al., 2010, 2012, 2013; Ward et al., 2014
Standardised (simulated) patients

Within speech pathology

1. Simulation of patients with aphasia, voice disorders, apraxia, dementia
2. Development of generic clinical skills and foundation clinical skills
3. Teaching, formative and summative assessment

Barrows, 1987; Edwards et al., 1995; Hill et al., 2010; Hill et al., 2012; Hill et al., 2013; Syder, 1996; Zraick et al., 2003
Background: Assessment

- Learning facilitated by appropriate formative and summative assessment


Clinical competency

- Clinical assessment tools need to
  - be authentic
  - consider placement objectives
  - consider expected professional/occupational competencies
  - adhere to ethical and valid assessment practices

Crossley & Jolly, 2012; Hattie & Timperley, 2007; McAllister et al., 2010; Norcini & Burch, 2007; Petrusa et al., 1987
Overall aim of research program

To investigate the use of standardised patients (SPs) within a clinical program for speech pathology students
Five studies

1. Validity of single interview assessment tool
2. Validity of simulation program assessment tool
3. Performance of SPs
4. Student perceptions
5. Reflections on clinical learning
Context of studies

- Second year students in a four year undergraduate speech pathology program
- Students’ first clinical placement
- Simulated clinic module for 12 weeks
- Module designed to support students’ learning in foundation clinical skills
Study 1: Validity of single interview assessment tool

**Aims**

1. to develop a tool suitable to assess foundation professional and specific clinical skills during interviews

2. to evaluate the content validity, internal consistency, and reliability of this tool.
Development of assessment tool

- No suitable tool available
- Development of appropriate tool with face validity

Standardised Patient Interview Rating Scale (SPIRS)
Please rate your student's performance by circling the appropriate number on the scales below. Use the tick boxes to provide more specific feedback. Please provide comments in the appropriate space.

**Unacceptable** – Demonstrates many behaviours in specified skill area(s) that are inappropriate or have negative outcomes or consequences (make the situation worse). The desired outcome is not achieved.

**Average** – Demonstrates a sufficient range of expected behaviours in specified skill area(s) to achieve the desired outcome. Some deficiencies exist in the skill area(s) assessed but none are of major concern.

**Excellent** – Consistently demonstrates the full range of expected behaviours in specified skill area(s) to achieve the desired outcome. An outstanding level of performance is maintained. No deficiencies exist in the skill area(s) assessed.

<table>
<thead>
<tr>
<th>Skills</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Non-verbal</td>
<td>unacceptable</td>
</tr>
<tr>
<td>Communication</td>
<td>1</td>
</tr>
</tbody>
</table>

- Poor □ Good: **eye contact**
- Poor □ Good: **use of facial expression**
- Inappropriate □ Appropriate: **body language**
- Inappropriate □ Appropriate: **use of gesture**

Comments:
Method

Participants
• 76 second year students and 10 clinical educators

Procedure
• Paired interview in week 5
• Clinical educators rated students individually on SPIRS
• 38 interviews (76 students in pairs) rated by expert rater for inter-rater reliability
Method (cont)

Data analysis

• Internal consistency of SPIRS – Cronbach’s alpha and mean inter-item correlation

• Inter-rater reliability – percent exact agreement (PEA) and weighted kappas calculated on each item for each rater pair

• Descriptive statistics – percentage students receiving ratings of 1 and 2, 3 and above, 4 and above, and 5 on each item and the global scale
<table>
<thead>
<tr>
<th>Rater</th>
<th>Cronbach’s alpha level</th>
<th>Mean Inter-Item Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert (n* = 76)</td>
<td>0.926</td>
<td>0.654</td>
</tr>
<tr>
<td>Rater 1 (n* = 12)</td>
<td>0.837</td>
<td>0.438</td>
</tr>
<tr>
<td>Rater 2 (n* = 11)</td>
<td>0.838</td>
<td>0.566</td>
</tr>
<tr>
<td>Rater 3 (n* = 6)</td>
<td>0.957</td>
<td>0.830</td>
</tr>
<tr>
<td>Rater 4 (n* = 5)</td>
<td>0.804</td>
<td>0.294</td>
</tr>
<tr>
<td>Rater 5 (n* = 6)</td>
<td>0.914</td>
<td>0.625</td>
</tr>
<tr>
<td>Rater 6 (n* = 4)</td>
<td>0.251</td>
<td>0.006</td>
</tr>
<tr>
<td>Rater 7 (n* = 8)</td>
<td>0.888</td>
<td>0.570</td>
</tr>
<tr>
<td>Rater 8 (n* = 12)</td>
<td>0.894</td>
<td>0.559</td>
</tr>
<tr>
<td>Rater 9 (n* = 6)</td>
<td>0.925</td>
<td>0.703</td>
</tr>
<tr>
<td>Rater 10 (n* = 6)</td>
<td>0.962</td>
<td>0.798</td>
</tr>
</tbody>
</table>
Results (cont)

- Percent exact agreement (PEA) – 72% to 93% (mean 82%)

- Weighted kappas
  - 41/70 substantial to almost perfect agreement range
  - 15/70 moderate agreement range

- Lowest PEA – Interpersonal skills and interviewing skills

- Highest PEA – Non-verbal communication
Students’ ratings on SPIRS

<table>
<thead>
<tr>
<th>Ratings</th>
<th>Percentage of students (mean across all raters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2</td>
<td>4</td>
</tr>
<tr>
<td>3 and above</td>
<td>96</td>
</tr>
<tr>
<td>4 and above</td>
<td>71</td>
</tr>
<tr>
<td>5</td>
<td>10 to 35 on at least one item</td>
</tr>
</tbody>
</table>

Highest ratings achieved on non-verbal communication
Lowest ratings achieved on professional practice skills
Study 2: Validity of simulation program assessment tool

Aim

- to investigate the validity of an assessment tool developed to specifically assess students’ foundation clinical competencies in a simulated clinical placement

Interviews with standardised patients + Clinical workshops + Screening assessment in kindergarten
Development of tool

• Competency Assessment in Speech Pathology: COMPASS®  (McAllister, Lincoln, Ferguson, & McAllister, 2006)

Assessment of Foundation Clinical Skills (AFCS)
Division of Speech Pathology  
Assessment of Foundation Clinical Skills

Student Name: ____________________________ Date: ____________________

Clinical Educator: ____________________________

Terminology and concepts used within this evaluation tool are based on Competency Assessment in Speech Pathology (COMPASS) and Competency-based Occupational Standards (CBOS, 2011) for Speech Pathologists – Entry Level. Clinical educators and students are directed to these tools for a fuller description of competencies and behavioural descriptors for Novice and Intermediate levels.

**Please refer to ‘Guidelines for assessing students using the Assessment of Foundation Clinical Skills’.”**

<table>
<thead>
<tr>
<th>Professional Competency Unit</th>
<th>Performance</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 Reasoning</td>
<td>N/A</td>
<td>Rarely</td>
</tr>
<tr>
<td>a. Takes client’s lead and follows up on information provided.</td>
<td>Mostly</td>
<td>Consistently</td>
</tr>
<tr>
<td>b. Identifies need for further information and seeks this where required.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Makes some links between case history information and knowledge about child development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Integrates information from the case history and assessment to identify the major presenting issues important for the client.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PC Unit 1: Reasoning Rating**  
(Mark the point on the line that best reflects the level of performance observed. Refer to the behavioural descriptors outlined on this form to guide your rating.)

Pre-novice  Novice  Intermediate
Method

Participants

• 130 second year students
• 18 clinical educators

Procedure

• Students assessed on AFCS at midway and end of placement on both consistency scale and VAS
• AFCS for each consenting student deidentified for analysis
Method (cont)

Data analysis

• Rasch analysis (Rating Scale Model) (Bond & Fox, 2007)
• Analysis of both VAS and consistency scale

• Validation determined according to Messick’s (1995) framework
  – Content
  – Substantive
  – Structure
  – Generalisability
  – External
  – Consequential
## Results: Validation on Messick’s framework (1995)

<table>
<thead>
<tr>
<th>Validity category (Messick, 1995)</th>
<th>Validity established?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>✓</td>
</tr>
<tr>
<td>Substantive</td>
<td>✓</td>
</tr>
<tr>
<td>Structure</td>
<td>✓/ ✗</td>
</tr>
<tr>
<td>Generalisability</td>
<td>✓</td>
</tr>
<tr>
<td>External</td>
<td>?</td>
</tr>
<tr>
<td>Consequential</td>
<td>✓/ ✗</td>
</tr>
</tbody>
</table>
Discussion and future directions

• SPIRS and AFCS both validated

• Unidimensional construct related to clinical competency

• Recommendations made to support use of tools in other clinical contexts

• Developments:
  – SPIRS used in online format using MarkRite system (Russell, UQ)
  – SPIRS adapted by audiology, physiotherapy and occupational therapy at UQ for assessment of students in simulated and other contexts

• Future directions:
  – Use of both tools in other universities
  – Use of SPIRS for OSCEs
Conclusion

SPIRS and AFCS

- validated assessment tools
- formative and summative assessment
- clinical skills and professional competencies
References


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