Selection of Anchors to Improve Children’s Self Report Using the Numerical Rating Scale (NRS) of Pain Intensity

Megan A. Young1, Carl L. von Baeyer1,2, Departments of 1Psychology, and 2Pediatrics, University of Saskatchewan, Saskatoon, SK, Canada

INTRODUCTION

The 0 to 10 numerical rating scale (NRS) is commonly used to obtain self-reports of pain intensity in children and adults1. However, there are currently no standard or validated verbal phrases to explain the upper anchor of the NRS to children (e.g., very much pain, worst pain, most pain you can imagine).

METHOD

Two phases
- Phase 1: Assessment of six anchors for severity, concreteness and clarity by a university student sample. (N= 98)
- Phase 2: Testing calibration and comprehension of the NRS-11 on three of six versions of the NRS-11, differing on upper anchor.

HYPOTHESES

- Calibration of the scale was expected to be affected by anchor severity: NRS anchors rated as highly severe will yield lower NRS ratings of painful events.
- Comprehension of the scale would be affected by both anchor clarity and concreteness: NRS anchors rated as highly clear and concrete will yield the most consistent NRS ratings of painful events.

RESULTS

Table 1. Child Participants from Phase 2 of the study by grade and sex.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>2</td>
<td>17</td>
<td>14</td>
<td>31</td>
</tr>
<tr>
<td>3</td>
<td>17</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>14</td>
<td>8</td>
<td>22</td>
</tr>
<tr>
<td>5</td>
<td>14</td>
<td>20</td>
<td>34</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>57</td>
<td>133</td>
</tr>
</tbody>
</table>

Phase 1 results suggested that a very clear, severe, and concrete anchor such as “hurt as bad as breaking your arm” may be most effective when administering the NRS-11 to children. Anchors such as “the most hurt” and “very much hurt” were rated lower by the university student sample on these three characteristics.

DISCUSSION

There was one significant effect of anchor in Phase 2: Most hurt is the worst anchor; the others are all roughly equivalent.

The results suggest avoiding “most hurt” as a top anchor. The best anchor can probably be chosen from one of the three alternatives that produce the lowest error scores.

There was a significant effect of grade on pain intensity. This is consistent with many clinical studies that have determined young children tend to give higher severity ratings of mildly painful events.

IMPLICATIONS OF RESEARCH

The information gained from this study may facilitate standardization of the anchors used with the NRS-11 with children.

Future research could further validate the clinical use of a particular maximal anchor with the NRS-11 by administering it to children undergoing painful procedures within the clinical setting.

REFERENCE