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Validation of Measurement Scales in Health Care

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Introduction

In order to give professionals useful tools, it is important to develop easy-to-use measurement scales, both for research and for clinical practice in health care [1-3]. Validity testing of scales is an on-going process, and a variety of methodological approaches should be used in order to understand what inferences can be drawn from the scale [4]. Inspired by the "think aloud" method [5], a qualitative design using both inductive and deductive approaches can be used [6]. Individual interviews to capture the direct voices of the participant's, is an important factor when aiming to measure abstract phenomena [4,7]. Interviews starting with open questions followed by questions based on scale items can be used to validate a scale. This data collection method aims to elucidate participant's perceptions [5] of their experience in their own words before introducing them to the scale. The next step is then to analyze data using both inductive and deductive qualitative content analysis [8].

Participants and Data Collection Procedure

A purposive sampling strategy [9] should be adopted, aiming example for variation in age, education level and gender. Tentatively, each interview starts with one or two open questions. During the interviews, the participants will be encouraged to reflect on their experience. The participant's then will complete the scale and describes their thoughts about each item, and why they answered as they did. The interviews will be recorded and transcribed verbatim.

Data Analysis

For the open questions, an inductive qualitative content analysis [8] can be used to explore the participant's direct experience. Transcripts of the interviews should then be read through several times and discussed, compared and validated by the authors. Words and sentences relevant to the research questions are then identified as meaning units, which then will be condensed and coded, grouped under subcategories and organized into categories (Table 1). In the final step, data should be analyzed by reading across the categories, searching for new associations and meanings in this process, a theme could be identified.

Meaning unit	Condensed meaning	Code	Sub-category	Main-category

Table 1: Example of analytic process

For the scale items, a deductive qualitative content analysis could be used [8]. The participant's answers will be read through and analyzed for each item, and the perceived meaning of each item should be identified. When the answers to the scale items were lower or higher the individual description of these scale items would be further analyzed (Table 2).

Name of the scale items	Range 1-7	The participant's described meaning of item as follow:	When answering lower the participant's describe as follow:	When answering higher the participant's describe as follow:

Table 2: An overview of the Semi-structured questions and the participant's description of their perception of the scale items

Finally findings from the inductive and deductive analysis could be compared to identify similarities and differences. This procedure allow for comparison in order to understand what inference could be drawn from the scale in relation to the participant's experiences. Adding more items to the scale must then be balanced against diluting the inferences that can be drawn [4].

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