Cognitive interviewing used in the development and validation of Copenhagen Psychosocial Questionnaire in Sweden

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Abstract
The Copenhagen Psychosocial Questionnaire (COPSOQ) has primarily been validated through psychometric methods. Therefore, cognitive interviewing was included as part of the validation project of COPSOQ in Sweden. The aim is to discuss the use of cognitive interviews for development and validation of the Swedish version of COPSOQ.
Informants were selected to achieve variation in age, gender, occupation, and region of residence. Individual interviews were performed with 26 informants using a think aloud approach combined with flexible concurrent probing based on an interview guide. The interviews were audio recorded and transcribed verbatim. The interviews were conducted in rounds followed by an initial analysis by the two first authors before adjustments of the questionnaire items were made. Currently, content analysis is ongoing.
The cognitive interviews provided insight into what people actually reflected upon while answering the questionnaire. This added new knowledge about how key terms such as ‘work place’ were understood by the respondents and also it helped identifying problems in the interpretation of specific words. The study has been approved by the Regional Ethics Board in Southern Sweden and is funded by the Swedish Research Council for Health, Working Life and Welfare (FORTE).

Background
The Copenhagen Psychosocial Questionnaire version II (COPSOQ II) was developed by the Danish National Research Centre for the Working Environment to be a valid instrument for the assessment of the psychosocial work environment and for facilitating communication between workplaces, work environment professionals, and researchers (1, 2). It is a comprehensive, generic instrument including numerous dimensions based on an eclectic set of theories on psychosocial factors at work and on empirical research, rather than being linked to one particular theory. The main topics in COPSOQ II are: demands at work, work organization & job content, collaboration & leadership, work-individual interface, workplace social capital, health & well-being, and offensive behavior (1, 2).

COPSOQ has been translated into more than 25 languages (3) and research from many countries has contributed to the validation of its use in research as well as in practical psychosocial work environment interventions. Published validation studies of COPSOQ are primarily based on psychometric and statistical analyses such as evaluations of the internal consistency, explorative analyses of the factor structure, ceiling and floor effects, and assessment of construct and criterion validity (e.g. (4-7), or test-retest stability (8). In contrast, only sparse information exists concerning empirical studies evaluating the content validity of COPSOQ.

The ongoing validation of the Swedish version of COPSOQ includes back-translation, development of supplementary items followed by cognitive interviews for questionnaire development and an epidemiological study.

Cognitive interviewing covers different techniques which can be used for the improvement of questionnaire design. The basis is a presentation of survey questions to informants, followed
by the collection of relevant data from the process of responding. Such information can be obtained through what in the literature is considered as two different approaches: a think-aloud procedure or probing (9, 10). However, these methods go well hand in hand as they to some extent have different advantages and drawbacks, and are often combined (9-11). In the Swedish COPSOQ validation study, cognitive interviews were conducted to identify potential problems in the questionnaire, to clarify how different concepts and questions were interpreted by the respondents, and thus to revise the Swedish version of COPSOQ. The intention of the present conference paper is to discuss the use of cognitive interviews for evaluation and improvement of translations and to illustrate it use in the development and validation of the Swedish version of the COPSOQ questionnaire. The presentation will follow the reporting format suggested by the Cognitive Interviewing Reporting Framework (CIRF) (11, 12).

The cognitive interview study
Research design
The study was designed to capture the perceptions of the questionnaire in the working population in Sweden and with special focus on health care employees. Hence, selection of informants aimed to obtain variation in age, gender as well as kind of job and workplace. As the actual use and understanding of the Swedish language may differ among people coming from different parts of the country a geographical diversity was also strived for. The interviews were conducted as verbal face-to-face interviews with concurrent probing. The probing consisted of fixed probes in addition to a more flexible form, following up on threads coming from the reflections of the informant.

Ethics
The study was approved by the Regional Ethics Board in Southern Sweden (Dnr. 2013/256 & 2013/505). The informants were contacted and given written information including the aim of the project, the interview procedure, legal rights in relation to voluntary participation, contact persons for further questions, as well as a form for giving their consent for participation in the project. In relation to carrying out the interview, written information was provided once more in addition to oral information and the opportunity for asking questions. Informants received a copy of the information including their signed consent to participate. Confidentiality of participants was secured through creation of code lists and depersonalization of data material.

Participant selection
The researcher’s network provided information on contact persons from different parts of Sweden who gave further suggestions of friends and colleagues considered suitable for the study and ready to participate. Informants were selected from these lists to achieve variation in gender, age, region of residence, and occupation.

Twenty female and six male informants participated covering age groups from under 30 years to more than 60 years. Informants came from Umeå in the North to Malmö in the South, from Gothenburg in the West to Stockholm in the East of Sweden, and even informants having a non-native Swedish background participated. Work experience of informants ranged from 1
to 38 years in the labor market and currently working from part time to full time (26-40 hours a week). People coming from different occupational groups and from private as well as public sector were interviewed. From the health care sector, nurse’s aides, nurse’s assistants, nurses, specialized nurses and doctors participated, some of which had managerial responsibilities. In a similar way all echelons within dentistry were selected. In addition, nine interviews were conducted with people working in other sectors than health care. These comprised traditional blue-collar workers, as well as e.g. specialists and project managers coming from industrial as well as creative settings.

Data collection

Interview data was collected in the autumn of 2013 by the second author and interviews were carried out to obtain information until saturation was achieved. Times and places for the interviews were decided in collaboration with the informants. The interviews lasted 40 – 70 minutes. Some informants preferred to be interviewed at home, while others chose a café or an undisturbed room at their workplace. The process of interviewing was continued until satisfactory formulations of questions and saturation of reflections, in relation to key concepts and content of questions, were achieved.

Before the interview was started the informant was introduced to thinking-aloud when answering questions as “how many windows do you have where you live?” The interview, which was based on an interview guide, was started when the informant felt confident with the process. It was emphasized that the study purpose was to achieve knowledge about how respondents understood and reasoned in relation to the questions, rather than providing knowledge about their concrete psychosocial working environment. Therefore, the informants were asked to keep their questionnaires and answers; otherwise the filled-in questionnaire was maculated directly after the interview. The ethical consent for using the think aloud procedure included people exclusively working in health care. Therefore, a revised interview protocol was designed for informants from other kinds of jobs. The main difference was that training in and stimulation to think aloud was excluded from the procedure. Instead use of probes was emphasized as well as an instruction to turn off the audio recorder in case of sensitive information was coming up during an interview.

The questionnaire was given to the informants page by page. Most informants chose to read the text of each item aloud and talk to themselves about their answer. Now and then, informants preferred to be silent. In such situations, the interviewer used open probing questions like “What did you think of when filling in this question?” or “How did you come to your answer on this question?” Thereby, probing was concurrent and flexible aiming to stimulate the informant to elaborate further on their thoughts in relation to the questions and response alternatives. Standardized as well as unstandardized probes, initiated by the interviewer or triggered by informant behavior, were used as suggested by Willis (10).

Interviews were conducted in five rounds. In addition to audio recording, short notes stating general impressions and immediate reflections were taken after each interview. After each round the two first authors reviewed the overall problems discovered during the interviews
and made suggestions for the research group about changes in the questionnaire prompted by the findings.

In addition to the primary analysis aiming especially at the development of a Swedish COPSOQ version, systematic content analyses across items and scales are ongoing.

**Some interview findings**

Key terms, as for example the word ‘workplace’, are frequently used in questionnaires on the psychosocial work environment. When informants were asked about what they perceived as their workplace, there was a tendency to define it in relation to collaboration structures and as a delimited part of the organization among informants having “people-work”.

> “Here, I think about the workplace as a whole, as a whole… (Interviewer: your area or?) Yes, - or rather my department- everybody who are working with this, from secretaries to emergency staff and leaders”

(Medical doctor working at a hospital)

In contrast, informants having other kind of jobs tended to focus more on the physical location or the overall company.

> “Workplace is the place where I work! The company that I work for”

(A specialist working for a large company with several branch offices)

In addition, informants referred to organizational levels ranging from work unit to company level. This illustrates that even though a formulation is generic, each informant interprets the question in relation to what is found to be meaningful in the context. The advantage is of course that it is possible to answer the question for people working under completely different conditions. On the other hand, the findings also indicate that a broad term as ‘workplace’ probably constitutes a challenge when generic questionnaires as COPSOQ are used for comparisons of psychosocial work environment among different occupational groups.

The interviews also provided information about what informants actually assumed the questions were asking as well as how words and concepts were used, when they told about their work (examples will be presented at the conference). This helped in adapting the questionnaire to Swedish. However, a special challenge is the balance of optimizing the Swedish version without jeopardizing the conceptual equivalence with international versions of the questionnaire.

**Methodological considerations**

We find that it was an advantage that all interviews were conducted face to face. This approach contributed to an atmosphere where the informants told about their work life as well as other issues in an open way.

In the think-aloud paradigm, the role of the interviewer is to interfere as little as possible during the interview, while the role of the interviewer is more active when probing (9). In the present study, we chose a combination of these methods and the fact that the interviewer had competences in interviewing as well as in work environment theories, provided good
opportunities for specific probing asking the relevant clarifying questions. This resulted in deeper knowledge than would have been possible if only using standardized probes, formulated in advance. We would have preferred to have the same protocol and procedure for all interviews. However, in practice, the interviews turned out to be rather similar in character as informants in general seemed to fall in two groups: either they spontaneously talked aloud by themselves without much stimulation, or probes were needed as openers for telling about how they understood an item, where they had problems etc. No informants at all came up with sensitive personal information as defined by the law; neither did anyone wish to withdraw from the study. After their interview several informants expressed that they had experienced it as enriching to think and talk about their work situation in relation to the questionnaire.

Triangulation by two researchers, who individually summarized the findings after each round of interviews, discussed the findings and presented a summary of problems and solutions to the research group, contributed to a structured and open process concerning decisions on handling of findings.

**Conclusion**

Cognitive interviewing was found to be a valuable contribution in the process of developing the exact formulation of the Swedish version of COPSOQ. Besides, it added new knowledge about key concepts and insight in what people actually reflected upon while answering the questionnaire. The use of cognitive interviews contributes to the existing internationally developed knowledge of the COPSOQ instrument, as well as self-administered questionnaires on the psychosocial working environment in general.

**Funding**

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List of references

3. COPSOQ International Network: www.copsoq-network.org