Using the Evaluative Linguistic Framework for Questionnaires to Assess Comprehensibility of Self-Report Health Questionnaires

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A B S T R A C T

Background: The Evaluative Linguistic Framework (ELF) was developed to judge the quality of health care texts for patients, based on systemic functional linguistic theory. This approach considers key variables such as context and structure, known to be important for communication. **Objective:** Our objective was to adapt the ELF to evaluate the quality of self-report questionnaires. **Methods:** We reviewed the Health Literacy Questionnaire using the ELF. On the basis of these data, we drafted the preliminary version of the Evaluative Linguistic Framework for Questionnaires (ELF-Q) and applied it to English- and French-language versions of two arthritis self-report questionnaires and to Spanish, Dutch, and Turkish versions of an arthritis questionnaire. **Results:** The developed ELF-Q was found to be effective for evaluating questionnaires in English and in four other languages. It contains nine items with new descriptions and assessment probes. These include overall organizational or generic structure of the questionnaire, metadiscourse (or text about the text), headings, rhetorical elements (function of each "move" or stage of the text in relation to the reader), the writer-reader relationship, technicality of vocabulary, lexical density (proportion of content words in the text), format, and overall judgment. We added assessment responses on a two- or three-point Likert scale to complement the assessment probes and make the intent and meaning of the probes fully explicit for the questionnaire developer or assessor. **Conclusions:** The ELF-Q is a framework practical to use for the development or assessment of any type of self-report questionnaire. Its application can identify features of a self-report questionnaire that could be improved to optimize its comprehensibility.

Keywords: comprehensibility, cross-cultural, linguistic, questionnaire.

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Introduction

Using self-report questionnaires to assess perceived health and health care–related issues is now common practice in research and is recommended for routine clinical practice in the interests of quality improvement [1–3]. Such patient-report outcomes have become mandatory in the evaluation of health care interventions (such as drugs and health technology) [4]. Traditionally, health-related questionnaires have been developed *de novo* drawing on some combination of patient feedback, clinician observation, expert opinion, theory, and/or other research [2]. New tools have also evolved from earlier instruments found to be outdated or inadequate or not sufficiently covering the current object of study. Newer methods of instrument development include grounded, validity-driven approaches to ensure that the concept to be measured is comprehensively captured in an explicit *a priori* and testable model [5]. Statistical procedures are then used to select best items from a pool and determine the instrument's construct validity and other psychometric properties for their intended purpose.

The literature on challenges for questionnaire development covers disease-specific versus patient-specific focus; translation and conceptual equivalence and associated issues [6]; and response bias of various types. Responder factors have included different interpretation of questions, accuracy of recall, assessment of improvement or deterioration, and "satisficing" [7] or giving answers that are satisfactory but not optimal [2]. Upholding a patient-specific focus as a solution to these quandaries, although superficially appealing, has its problems [2,8]. The capacity of the questionnaire developer to express in written

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language—as his or her sole medium—a maximally comprehensible document appears to be generally unguided by any theoretical linguistic underpinning.

The development of self-report questionnaires in the field of health measurement has encouraged increased use of such questionnaires in surveys and population studies, and particularly in assessing outcomes of interventions in clinical trials. This has led to the need to adapt questionnaires cross-culturally into the many languages of the populations that are included in these studies [9]. This further highlights the necessity of being able to assess the comprehensibility of these questionnaires to make sure that targeted health aspects are captured as accurately as possible.

The Evaluative Linguistic Framework (ELF) [10–12] was developed to assess the quality of health care text on the basis of a theory of language known as systemic functional linguistics [13]. The theory seeks to describe how language functions as a meaning-making system, taking into account context and how readers construct meaning from text. The theory provides analytical tools at the level of the whole discourse, as well as at the level of vocabulary and grammar, to investigate the relations of text and context, the better to see how readers construct meaning. The theory allows us to be parsimonious and adopt only those features of the theory that are relevant to particular investigations [12].

The ELF was originally conceived and designed to assess the comprehensibility of a text whose purpose was to inform patients about the drug they were advised to take by their health care practitioner. It comprises nine items and 20 assessment probes, adapted for summary purposes in Table 1. The specific kind of discourse at issue (e.g., drug information leaflets, questionnaires) is viewed in systemic functional linguistics terms as the *genre*, known as a staged, goal-oriented social activity. It describes how

something gets done in text and is therefore impacted by ("realizes" in systemic functional linguistics terms) the context of a situation and, more abstractly, the context of culture. The ELF therefore provides a meaningful assessment of written text with regard to comprehensibility of materials and how they can be improved [14,15]. For example, consumer testing of a set of rheumatoid arthritis medication leaflets indicated that leaflets generated using the ELF were consistently preferred to those generated without it; they were more user-friendly, comprehensive, clearer, and more effective in communicating information [14]. The ELF has also been found to be useful for considering decision aids for consumers of varying literacy levels [15].

It is likely that these considerations are also important for optimal comprehensibility of the language of self-report questionnaires. However, the very sensitivity of the instrument to genre suggests that it needs to be further adapted, with additions and omissions of elements, for different health care texts (genres). For example, an adaptation of the ELF was recently used to evaluate a set of informed consent documents [16]. The self-report questionnaire features such as the structure and organization, as well as the specific formulations in items in the form of questions or statements and their answer scale modalities, mean that it will be a different genre again. We have therefore sought to adapt the ELF to create the Evaluative Linguistic Framework for Questionnaires (ELF-Q), whose purpose is to provide meaningful linguistic assessment of self-report questionnaires. This article outlines the adaptation process including testing of the new tool with English- language and non–English-language arthritis self-report questionnaires.

Methods

Adaptation Process

To amend the structure and content of the ELF to fit the analysis of a questionnaire, we chose the Health Literacy Questionnaire (HLQ) [17] as the model of a self-report questionnaire because it was considered to conform to the principles underlying the ELF and it contained both interrogative queries and declarative statements to which users responded. The HLQ captures the concept of health literacy across nine distinct domains and includes 44 items in nine scales, namely,

1. Feeling understood and supported by health care providers;
2. Having sufficient information to manage my health;
3. Actively managing my health;
4. Social support for health;
5. Appraisal of health information;
6. Ability to actively engage with health care providers;
7. Navigating the health care system;
8. Ability to find good health information;
9. Understand health information well enough to know what to do.

Each of the nine scales contains between four and six items that are scored as a graded response (either *strongly disagree*, *disagree*, *agree* and *strongly agree* or *cannot do*, *very difficult*, *quite difficult*, *easy*, and *very easy*). Scale scores are devised by calculating the average response for each scale, that is, range between 1 and 4 for the agree/disagree scales (scales 1–5) and between 1 and 5 for the degree of difficulty scales (scales 6–9).

Three authors (R.C., F.G., and R.B.) independently examined the HLQ in light of the ELF to identify, first, its generic stages or "moves" and, second, to identify fits and gaps in the ELF for analyzing the qualities of a questionnaire. On the basis of these

Table 1 – The Evaluative Linguistic Framework.

Item	Description
Overall organizational or generic structure of the text	Series of stages or "moves" in a text (e.g., background on drug, dosage instructions, and account of side effects)
Rhetorical elements	The function of each move in relation to the reader (e.g., to define, to instruct, and to inform)
Relationship between the writer and the reader	Nature of the relationship between the writer and the reader (e.g., medical expert to layperson; doctor to his or her patient)?
Metadiscourse	Description of the purpose/structure of the text
Headings	Signposts in the text for the reader
Technicality of vocabulary	The technicality of the medical terminology/other vocabulary that is used
Lexical density	Density of the content words in the text
Factual content of text	Facts included in the text
Format*	Visual aspects such as layout, font size, and use of visual material

* Format included here for completeness although not a linguistic consideration.