"Why can't I just use Google Translate?"

A study on the effectiveness of online translation tools in translation of COAs

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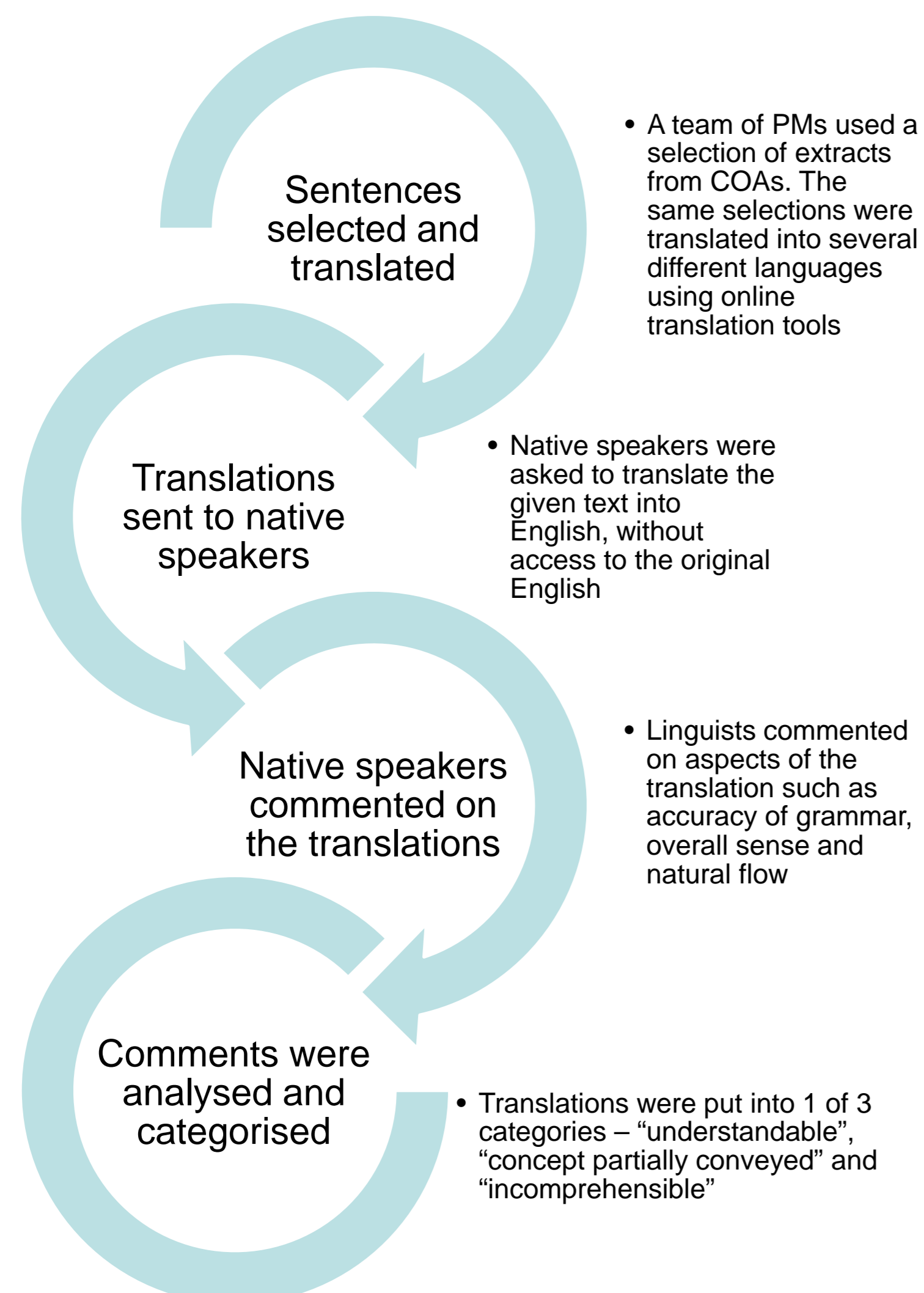ICON Language Services, Abingdon, UK

Objective

Online machine translations are increasing in popularity as people look for simpler and faster solutions for their translation needs. The idea of using digital computers for translation of natural languages was proposed as early as 1946 using various different approaches. The most popular today is Google Translate which was launched in 2006, built around a phrase-based statistical method. As opposed to how the human brain processes language, using complex neural networks, online machine translation works by analyzing a back catalogue of pre-existing translation text, of unknown degrees of quality. It then analyses the text in parallel in both their original and target languages, then uses statistical probabilities to select the most appropriate translation. However when reviewing translations produced via these tools and comparing them with their source counterparts, misinterpretations may begin to show.

The objective of this study is to identify whether using online machine translations for the translation of clinical outcome assessments is feasible.

Methods

The research methods used were designed to establish how accurate online machine translations can be when tasked with translating extracts from COAs. For this study, 13 sentences were chosen from genuine previous linguistic validation projects, namely the HADS [1] and the CADSS [2] questionnaires. These phrases were put into various online translation tools including Google Translate, to be translated into several different languages. To gauge the accuracy of the machine translation, the next step would be to back translate into English. It became apparent however that due to the nature of how machine translations work, it is impossible to verify the quality of the forward translation by running this back through the same online translation tool as the English source text would appear verbatim, since the tool would recall the English. It would give no explanation on the quality of the forward translation. Therefore the subsequent step required in verifying the quality of the machine translation would be to conduct a true back translation. This would need to be carried out by native speakers of the target language who were blinded to the original source English who would then assess the accuracy of the text and check that the translations conveyed the intended meanings.

The following methodology was followed:

- **Sentences selected and translated** — A team of PMs used a selection of extracts from COAs. The same selections were translated into several different languages using online translation tools

- **Translations sent to native speakers** — Native speakers were asked to translate the given text into English, without access to the original English

- **Native speakers commented on the translations** — Linguists commented on aspects of the translation such as accuracy of grammar, overall sense and natural flow

- **Comments were analysed and categorised** — Translations were put into 1 of 3 categories – "understandable", "concept partially conveyed" and "incomprehensible"

The criteria for establishing accuracy of translation was based on feedback from the native reviewer on how well the concept of the source was conveyed in the target, as well as syntax, grammar and cultural relevance.

Results

The following grid shows just a selection of the most interesting responses received during the study, and an explanation of each resulting translations:

Language	Source English	Machine translation	Back translation (by native speaker)	Comments
Arabic (Egypt)	I feel tense or 'wound up'	اشعر بتوتر أو "الجرح حتى" ,	I feel anxious, or hurt even	The first part of the sentence does convey the idea of tension with the back translation 'anxious', however, the phrase 'wound up' has been translated as 'hurt' focusing on the term 'wound' as meaning 'injury'.
Japanese (Japan)	I get a sort of frightened feeling like 'butterflies in the stomach'	私は「胃の中の蝶」のようにおびえた感じの並べ替えを取得します	I obtain scared sorting like a 'butterfly in a stomach'.	The concept of being frightened has been partially conveyed, however with many mistakes present, including the mistranslation of the metaphor 'butterflies in the stomach', which is not a metaphor in Japan.
Japanese (Japan)	Have you spaced out, or in some other way lost track of what was going on during this experience?	あなたは間隔をあけ、または他の何らかの方法でこの経験の間に何が起こっていたかのトラックを失ったことがありますか？	Have you lost track (or truck*) of what happened during this experience with spaced apart or in some other ways?	The translation has no natural fluency or flow. The notion of being spaced out has been transformed into a different concept of physical separation and the order of the question is completely different. *Interestingly the translation of track can be interpreted as both track or truck, however the expression to 'lose track' would not necessarily convey the same intended meaning as in English.
Hungarian (Hungary)	I feel somewhat disconnected from myself, but I am basically all together.	Úgy érzem, kissé kihúzta magam, de én tulajdonképpen az összes együtt.	I feel like that somewhat that I am straight, but overall that is together.	This sentence completely diverted from the original source, there is no fluency to the language and the respondent would not be able to understand the statement.
French (France)	I get a sort of frightened feeling like 'butterflies in the stomach'	Je reçois une sorte de sentiment peur comme «papillons dans l'estomac»	I receive a sort of feeling fear like 'butterflies in the stomach'	The phrase contains incorrect grammar but also the phrase 'butterflies in the stomach' is an expression in France to refer to the feeling you have when you have amorous feelings towards someone, rather than fear.
Xhosa (South Africa)	I get a sort of frightened feeling like 'butterflies in the stomach'	Ndifumana uhlobo lwemvakalelo ningothuswa ezifana noxuxuzelelwa sisusi	I have got the kind of feeling don't be shocked like flatulent stomach	Different meaning has been conveyed with the English metaphor concerning 'butterflies', which has been mistranslated as referring to flatulence and the idea of being frightened is completely lost.
Xhosa (South Africa)	I feel tense or 'wound up'	Ndiziva langoku okanye ' ababophelele '	I am feeling now or tied	The two main concepts of feeling 'tense' and 'wound up' have been mistranslated. 'Wound up' has multiple synonyms and machine translation has chosen the incorrect option for this context.
Korean (South Korea)	I feel somewhat disconnected from myself, but I am basically all together.	나는 나 자신 다소 연결이 끊긴 느낌 ,하지만 난 모두 함께 기본값 입니다.	I myself seem to be a little disconnected, however I am basic, just like everyone else.	This machine translation has resulted in two major errors, the first being the adverb 'basically' has been translated as an adjective which has changed the intended meaning. The other mistranslation is of 'all together' (implying you are as a whole) which has been translated as 'everyone else'.
Tamil (India)	I can laugh and see the funny side of things	நான் சிரிக்க விஷயங்கள் வேடிக்கை பக்க பார்க்க முடியும்	I could see laughing things	The translation produced by machine translation gives the idea that 'laughing things' can be seen by the subject, however, the intended statement is that the subject is able to laugh and have a positive outlook.
Romanian (Romania)	I feel tense or 'wound up'	Mă simt tensionat sau "lichidare"	I feel tense or "liquidation".	Another example of 'wound up' being translated into an inappropriate synonym for this context.
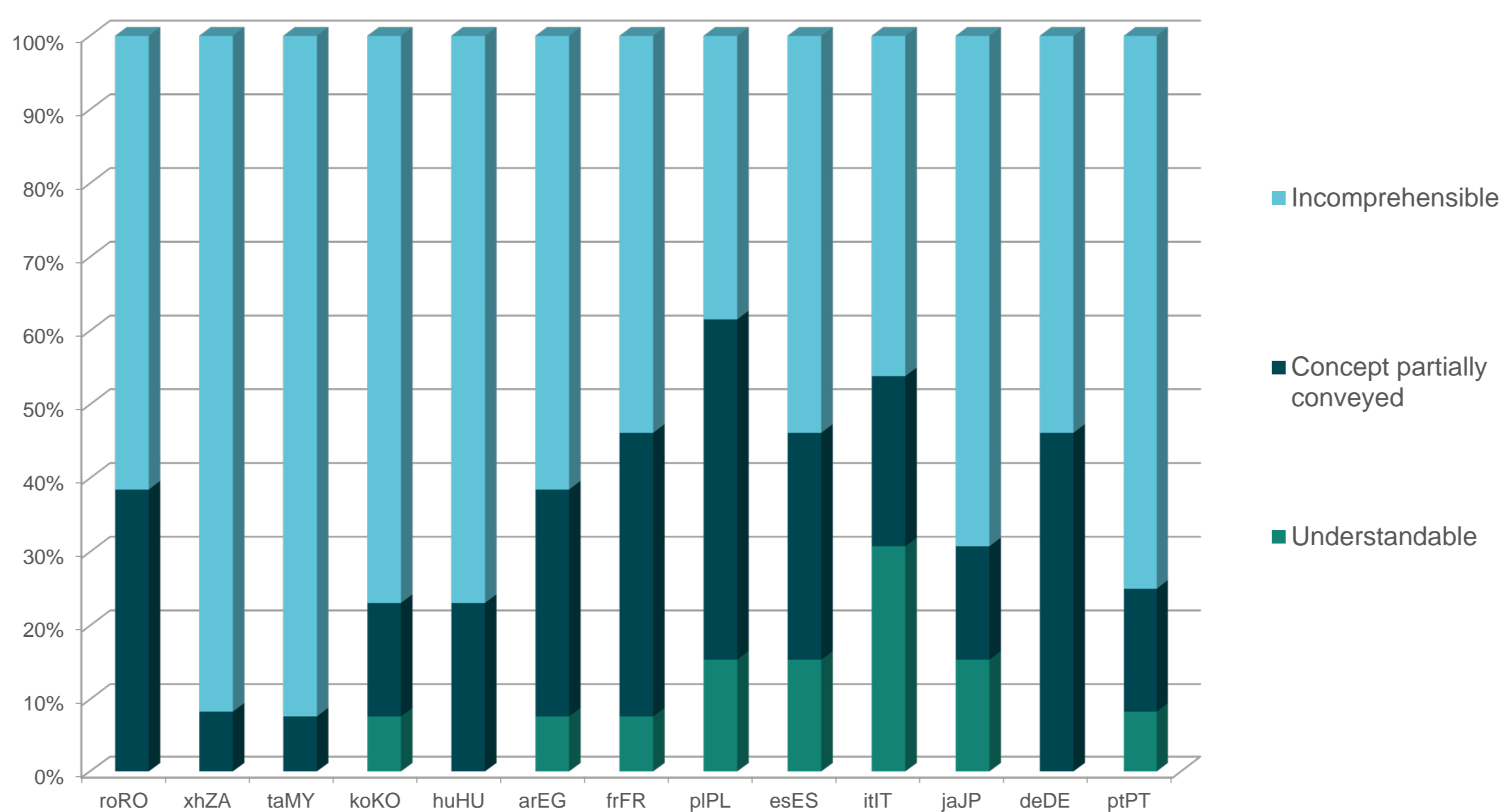
Across all items and all 13 languages, 66% of translations were found to be incorrect (incomprehensible or not conveying the intended meaning), while 26% contained the correct concept but with grammar and syntax issues, and only 8% of translations were deemed to be of a high enough quality to use "as is". This chart shows the distribution of the categories across each language.

- ■ Incomprehensible
- ■ Concept partially conveyed
- ■ Understandable

Conclusions

It was concluded that whilst online translation tools may be a "quick fix" for words or phrases, they may not be suitable for more complex text, especially where it's important to convey the correct concept and meaning. It was also determined that its effectiveness depends on the quality of the original language samples and back-catalogue available for the online tool to pull from. When Google Translate and other translation tools use statistical matching to translate, translated text can often include apparently nonsensical and obvious errors, often swapping common terms for similar but nonequivalent common terms in the other language, as well as inverting sentence meaning. An additional problem is that, if there is no translation available in the system, the particular word or phrase will be left in English without offering a translation. When translations are provided, these often also contain grammatical errors. Furthermore, online translation tools currently do not understand metaphors or meaning behind the language and therefore will often select a literal translation rather than a conceptual one, especially if a confirmed translation is not available in the back catalogue.

In conclusion, the results of this study indicate that for any patient facing document, particularly a COA where conveying the correct meaning is of paramount importance and could impact study data, online translation tools should not be used as they are no replacement for a human translator with a vast and complex knowledge of the language and culture, who would have the whole context of the source text available to them allowing them to select appropriate translations in order to convey the intended meaning.

References

[1] Hospital Anxiety and Depression Scale (HADS) 1983, Zigmund, AS; Snaith, RP

[2] Clinician Administered Dissociative States Scale (CADSS), 2008 J Bremner, Douglas MD