As interpreting comes into its own as a profession, there is increasing need for scientific research studies that tap into what interpreters are doing cognitively while they engage in the act of mediating communication between speakers of mutually unintelligible languages. The first waves of interpreting research focused upon text analysis of the product of interpreting and survey methodologies that elicited self-reported information regarding standard practices, competencies, and consumer needs. Less research attention has been directed at understanding the psychological processes that underlie the production and comprehension of language.

The introduction and comprehension of language is the most complex cognitive activity the human brain engages in. Interpreters take this complex activity beyond a single language to the crosslinguistic, and in our case also crossmodal, multitasking activity of mediating communication between speakers of mutually unintelligible languages. Yet we know very little about how that processing is accomplished.

Models of Interpreting

- Integrating Theory of Translation (Seleskovich & Lederer)
- Integrated Model of Interpreting (Colonomos)
- Cognitive Load Model of Interpreting (Gile)
- Social Communicative Model of Interpreting (Cokely)
- Information Processing Models (Moser-Mercer)
- Mean/ing-Based Model of Interpreting (Russell)

Subject Groups

Professionally trained interpreters
- Trained in different models
- Varied criteria for “professional”

Interpreting students

Bilinguals
- Language teachers
- Informal interpreters
- Bilinguals with high working memory
- Balanced and unbalanced bilinguals

Measures

Decale (Ear-Voice-Span for spoken languages): time in seconds or in words between beginning of source and beginning of target (measurement protocols vary)

Target output:
- Fidelity: How close is meaning of target to meaning of source?
- Fluency: How fluent is the target?

Grammaticality: Is the grammatical target?

Turkish: Ko havuc-u ye di

girl carrot-accus. eat past

Low fidelity: A girl ate.

Low fluency: The uh... The girl uh ate the uh carrot.

Low grammaticality: The girl carret ate.

Hypothesis testing (reading time, recall, close tasks):
- Cognate effect (facilitates indicates horizontal processing)
- Asymmetric switching cost (harder to switch to L1 in a task, presumably because it’s been actively inhibited)
- Articulatory Suppression Effect (coarticulation interferes with processing)

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Psycholinguistic Findings on the Interpreting Process

- Interpreter strengths: Working memory (Christoffels, 2004), lexical retrieval (Christoffels, 2004; Padilla et al., 2005)
- Directionality: Sign language interpreters prefer L1 to L2 (McCloskey & Emmaney, 2013); results on spoken language interpreters are mixed (Christoffels, 2004)
- Letting go of form: Findings are mixed, evidence for both horizontal and vertical processing; e.g. evidence for vertical processing: sign language interpreters, but input as propositional (Isham & Lane, 1994); evidence for horizontal processing: lexical effects (Mazco & Bajo, 2006)
- Clause is major unit of processing: (Isham & Lane, 1993)
- Inhibitory processes: Both languages are active, inhibitory effects are larger in switching from L2 to L1 (Kroll et al., 2008)
- Spoken vs. sign language interpreting: Spoken language interpreters have lower recall of source language form (Isham, 1994) Spoken language interpreters don’t show the articulatory suppression effect (Padilla et al., 2005)

Neurolinguistic Findings on the Interpreting Process

Note: While areas increase in volume for skills acquired as children (budding), they appear to reduce in volume for skills acquired as adults (pruning). Georgio et al. (2010, Gogtay et al., 2004; Paus, 2005)

Findings:
- Reduced volume compared with balanced bilinguals: pars opercularis, left pars triangularis, left middle anterior cingulate gyrus, bilateral anterior insula (Elmer et al., in press)
- Caudate nucleus and putamen as the likely candidates for executive decision-making and control of networks supporting simultaneous interpreting (MRI studies by Moser-Mercer (2010), inter alia)
- Grey matter volume in the left supramarginal gyrus, right pars opercularis, and bilateral caudate nucleus was negatively correlated with the number of practice hours reported by interpreters (Elmer, in press)

The naturalness issue: See also Gile (1998). It feels contrived, read, rehearsed, or stilted.

Research is carefully controlled and designed to elicit a narrow range of responses and to answer specific questions about isolated components of the interpreting process.

The data are elicited in an experimental setting.

Experimental Method: Elicited Production

An experimental method that presents a context (source text) that is designed to tap into a particular linguistic response (target text). Interpreting would be a natural occurrence of elicited production but for the lack of experimental control. (See de Bot, 2000

Question: Interpreters say they let go of form, but psycholinguistic studies report a phenomena called syntactic priming that influences structural choices made in subsequent utterances. Does syntactic priming impact the interpretation process?

Experiment (example based on our current study): Subjects (75) use GoReact, see and hear one of two test sentences in the same source language context, and interpret into another language.

Findings:
- First sentence: The deer didn't survive the accident. The dog didn't survive the accident. Compared: The deer was in the deer car but the dog was not in the car. The deer died, the dog didn't die.

Responses are analyzed for evidence of the influence of the form of the test sentence (active vs. passive) on the production of the parallel target sentence. Does the form of the target match the form of the source? Is the target differentially delayed, or does it differ in grammaticality, fluency or accuracy? A systematic effect of the source sentence on its target counterpart would suggest form has not been released.

Statistics: As is all production experiments, the statistical analysis is challenging due to the variability in responses. A response that is high in fidelity, accuracy, and grammaticality still might differ too much from the targeted response type to be usable. Two approaches to this issue are:
1. Exclude subjects with too much missing data and use parametric tests,
2. Use non-parametric tests

Conclusion: On-line experiments are lacking in interpreting research. While labor intensive and unnatural, they are critical to fleshing out the findings of neuro-imaging studies and are the only way to scientifically isolate otherwise untestable subcomponents of the interpreting process. Resources need to be shared across laboratories.

Tapping into what happens as we interpret: A review of the on-line processing literature and a proposal for international collaboration

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Introduction

Psycholinguistics of Interpreting Studies

Studies to Specific Signed Language

Interpreting as Elicited Production

The data are produced in an actual interpreting situation.

Samples of interpreting are readily available from a variety of venues.

No experimental control.

Interpreters have high levels of metalinguistic awareness, but no one is consciously aware of the inner workings of cognitive and linguistic processes. Psycholinguistics has grappled with this issue from its inception. The field of psycholinguistics would have remained at a standstill if naturalness had never been set as a top priority. Scientific experimentation requires isolating individual components of the process for study.

Vertical Processing

Horizontal Processing

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