Záró beszámoló

The role of cognitive abilities in the development of pragmatic competence

The project looked at various factors affecting neurotypical 3 to 12 year-old children's comprehension of non-literal utterances, i.e., utterances where the linguistic, truth-conditional meaning differs from the speaker's intended meaning. Our approach was strictly empirical with over 30 experiments conducted over the four years assessing the lexical and morphosyntactic knowledge, metalinguistic awareness, working memory, cognitive flexibility, intention attribution ability, mentalisation ability and a broad range of aspects of pragmatic competence of over 300 children and almost 500 adults. Some of the tests used for the experiments were standardised tests available to the scientific community but most of them were developed and piloted by the research group for the purposes of the project thus producing carefully constructed databases of Hungarian linguistic materials, graphical materials and experimental paradigms suitable for the assessment of the pragmatic ability and associated social and cognitive skills of different age groups.

The details of the experiments including their theoretical foundations, precise methods and results are described in the annual reports. This final report will only summarise our main conclusions and their possible applications.

Main empirical findings

The main empirical findings of the project were that

(1) working memory and executive functioning have a pronounced effect on children's ability to derive ad hoc implicatures, and even three year-olds' performance can be improved by reducing the cognitive load of the task (Babarczy & Balazs 2018);

(2) mentalisation and inferential abilities to some extent correlate with the comprehension of speech acts and novel metaphors while vocabulary size and morphosyntactic knowledge also play a significant role (Balazs et al. 2019);

(3) children's ability to make use of the linguistic context to infer the meaning of novel expressions increases with age but the results are currently inconclusive as to what extent the explanation lies in core linguistic knowledge, executive function or some other factor (Babarczy et al. 2019); and

(4) while mentalisation ability does not appear to be a good predictor of irony comprehension, simple training in metalinguistic awareness can dramatically improve children's irony performance (Szucs & Babarczy 2017).

The model tentatively emerging from the above is that as core language skills and metapragmatic knowledge become well-rehearsed and automatic, cognitive resources are freed up for mentalisation and inferential processes thus improving pragmatic competence.

Contribution to linguistic and psycholinguistic theory

Our experiments were designed with reference to specific hypotheses predicted by linguistic and/or psycholinguistic theories enabling us to refine models of language and of language use. In a particularly relevant strand of the project, we performed a series of experiments exploring various contextual and task factors affecting the production, processing and interpretation of Hungarian preverbal focus sentences by adults. We compared our results to the results of studies looking at various types of implicatures in other languages. Our main conclusion is that although we need to be cautious classing preverbal focus as an ad hoc implicature on theoretical grounds, its processing is empirically indistinguishable from the processing of expressions typically categorised as ad hoc implicatures. We further explored predictions following from current approaches to the nature of pragmatic knowledge: Giora's Optimal Innovation Hypothesis, Relevance Theory and neo-Gricean models of pragmatic competence. A complex picture emerged from the data with some evidence for some aspects of all three approaches. Our results on implicature processing support the notion of cognitive effort central to Relevance Theory. The patterns displayed by schoolchildren in the comprehension of metaphors are in line with the Optimal Innovation Hypothesis, the observed developmental trajectory of metaphor understanding during the kindergarten years suggests that cognitive resources play a major role as predicted by Relevance Theory, and the pronounced differences between the interpretation of conventional versus novel metaphors points to the separation of semantic content and pragmatic content as maintained by Horn's neo-Gricean theory. Finally, our results concerning children's interpretation of speech acts provide evidence that core (Gricean) semantic knowledge and inference are the foundations on which pragmatic knowledge can be built - a principle advocated by some neo-Gricean models.

Contribution to education

Since pragmatic inference is a major component of communication in both formal and informal settings, our research was followed with interest by parents, educators and language therapists and we were invited to various non-scientific or semi-scientific events and media appearances (Qubit, IPM magazine, HVG, Petofi radio, film clubs, "Kis tudósok délutánja" (Little Scientists' afternoon)). Of special interest are three of our findings: First, while

pragmatic competence is greatly dependent on the availability of cognitive resources, it can be significantly improved by reducing the cognitive load of the task by various means. Second, although children's cognitive resources and mentalisation ability undoubtedly play a role in successful pragmatic inference, pragmatic skills will also improve through repeated exposure to pragmatic phenomena in the environment, and better pragmatic competence may in turn have a positive effect on non-linguistic cognitive skills and mentalisation ability. Third, morphosyntactic and lexical competence are to a large extent but not entirely independent of pragmatic ability, and complex inferential processes are involved in computing figurative meanings from literal meanings. These processes appear to be automatic and effortless to a mature language.

Deliverables

The project produced a large body of linguistic and graphical materials that can be used for further research or in educational assessment. These include:

- A database of conventional metaphors with corpus frequencies, child familiarity ratings and imaginativeness ratings.
- A database of conventional metaphors with child-directed corpus frequencies, parent familiarity ratings and images depicting the literal and the metaphorical meanings.
- A database of "novel metaphors," i.e., expressions conforming to Hungarian phonotactic and morphosyntactic rules with no conventional meaning whose intended meaning cannot be guessed without context. A series of images depict various possible and impossible meanings.
- A database of speech acts (hints) with varying syntactic and inferential complexity but of constant syllable count. Each speech act is embedded in a short animated story. Additional images depict sets of likely and unlikely conclusions to the stories.
- A database of illustrated stories with ironic utterances and intentional deceit.
- A database of images depicting the outcomes of simple transitive actions (used to test the interpretation of ad hoc implicatures).

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