

Testing theories of irony processing using eye-tracking and ERPs

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The researchers involved are developing a track record of collaborative research in Experimental Pragmatics, investigating issues such as the processing of reference, pragmatic anomalies, and, more recently, figurative language. The applicants bring together expertise in using methods in Experimental Psychology, namely eye-tracking (in which Filik has over 10 years of experience) and EEG (in which Leuthold has over 20 years of experience) to investigate theoretical issues in language processing.

Background of the topic:

Despite the fact that the use of irony is very common in everyday utterances, most empirical research on figurative language has concentrated on metaphor, with very little work investigating the underlying mechanisms involved in understanding ironic utterances. However, there has been a relatively large amount of theoretical work concerned with the communicative function of irony (see Gibbs & Colston, 2007, for an overview). From this, a number of contemporary theories regarding how irony is processed and understood have emerged, including:

The Standard Pragmatic View

According to the standard pragmatic view (Grice, 1975; Searle, 1979; 1993), irony is a figure of speech that communicates the opposite of what is said. For example, by saying “What lovely weather!” in the middle of a storm, the speaker actually communicates “What terrible weather”. Under this view, the comprehension of non-literal language takes place in a number of stages. A reader or listener must firstly compute the utterance’s context-independent, literal interpretation, before deciding whether the literal interpretation is the speaker’s intended interpretation. If a mismatch with context indicates that the literal interpretation is inappropriate, it is then necessary to cancel the surface-literal interpretation, and compute the non-literal interpretation by assuming the opposite of the literal interpretation. It is clear from this that non-literal language requires further processing effort than literal language, in the form of extra inferential processes resulting from a mismatch with context. Thus, from a processing perspective, non-literal language should result in a higher processing cost than the same utterance that is intended literally.

The Direct Access View

The standard pragmatic view has been challenged by the direct access view, which assumes that contextual information interacts with lexical processes very early on (see e.g. Gibbs, 1986; 1994; see also Clark & Gerrig, 1984; Sperber & Wilson, 1995, for similar assumptions). The basic premise is that similar underlying mechanisms are involved in the initial processing of both literal and figurative language (Gibbs, 1994). That is, “understanding irony does not necessarily require special cognitive processes beyond those used to comprehend literal speech” (Gibbs, 1994, p.437). Thus, if context supports an ironic interpretation of the statement, it can be directly accessed (or constructed, in the case of unfamiliar ironies) without the need to access (or construct) the literal interpretation first. In processing terms, no extra steps would be required for non-literal statements, resulting in no additional processing cost.

The Graded Salience Hypothesis

An alternative to these accounts is the graded salience hypothesis (Giora, 1997), according to which the most salient interpretation of a statement is always directly accessed. In order to be salient, utterances have to be coded in the mental lexicon. In addition, they must be prominent due to their conventionality, frequency of exposure, experiential familiarity, or prototypicality. Salient interpretations are assumed to be accessed from the mental lexicon immediately on encountering the linguistic input. Non-salient interpretations require extra inferential processes and strong contextual support. In processing terms, if an ironic utterance is familiar (encoded in the lexicon) then the ironic interpretation should be available without the need for extra inferential processes (e.g., Giora, 1999; Giora & Fein, 1999). In contrast, if an ironic utterance is novel or unfamiliar, then the more salient literal interpretation would be computed first, leading to an additional processing cost when a mismatch with context means that the utterance must be re-interpreted as being ironic.

Empirical evidence

To test the predictions of these accounts, a number of empirical studies have investigated reading times for ironic vs. non-ironic statements. For example, Giora, Fein, and Schwartz (1998, Experiment 1) report evidence of delayed processing for ironic statements, with longer sentence reading times for target sentences presented in irony-biasing than literal-biasing contexts (see also Dews & Winner, 1999; Schwoebel, Dews, Winner & Srinivas, 2000). In contrast, Gibbs (1986, Experiment 1) reported *shorter* sentence reading times for ironic comments (e.g. “You are a fine friend”) than non-ironic counterparts (“You are a bad friend”). In addition, when reading times for sentences with the same surface form (“You are a fine friend”) were compared in ironic (somebody *not* being a good friend) and non-ironic (somebody being a good friend) contexts, there were no differences. However, simple non-ironic acknowledgements like “You are a good friend” were read more quickly than ironic comments (see Giora, 1995, for further discussion of Gibbs’ results).

Evidence from event-related brain potentials (ERPs) suggests that although there is a processing cost related to the comprehension of irony, it occurs early, specifically, before the reader has finished reading the last word in the phrase (Katz, Blasko, & Kazmerski, 2004). Furthermore, in a word-by-word self paced reading study, Ivanko and Pexman (2003, Experiment 3) showed that context could modulate processing difficulty for ironic utterances. Importantly, in some contexts, reading times for ironic statements were faster or equivalent to those for non-ironic statements.

In a recent eye-tracking study, Filik and Moxey (2010) monitored people’s eye movements as they read unfamiliar ironic or non-ironic statements. They showed that people

spent longer reading ironic than non-ironic texts, and in particular, that readers went back to re-read earlier portions of the text in ironic conditions, suggesting that additional processing was required in order to integrate the target sentence with context.

It can be seen from this that empirical evidence regarding the time-course of irony processing during reading is somewhat mixed. However, a key aspect of the graded salience hypothesis which distinguishes it from the other theories, and is not addressed by these studies, is that it predicts differences between the processing of familiar vs. unfamiliar ironies (e.g., Giora & Fein, 1999). This is what we plan to investigate here.