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► **To cite this version:**

Chiara Mazzocconi, A Barrault, Maud Champagne-Lavau. Does laughter cue ironic intent?. 2021.
hal-03878577

HAL Id: hal-03878577

<https://hal.science/hal-03878577>

Submitted on 29 Nov 2022

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Does laughter cue ironic intent?

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Keywords: irony, laughter, contextual incongruity.

Laughter is informative about mental states and able to affect the meaning of our utterances. We propose to investigate for the first time the interaction of laughter and contextual incongruity in the attribution of ironic intentions to speakers. Our study will have implication for the refining of the Constraint Satisfaction Model of irony processing (Campbell and Katz, 2012) and highlighting the importance of laughter in semantic and pragmatic processing.

Introduction

Many scholars highlighted the important role that laughter has in conversations both at the semantic and pragmatic level (Glenn and Holt, 2013; Mazzocconi et al., 2020; Ginzburg et al., 2020). Laughter is relevant to the study of irony processing since it has been shown to be a valuable cue of non-literal intentions since infancy (Hoicka and Gattis, 2008). The ability to infer speaker's intentions is a crucial element for irony understanding (Happé, 1993; McDonald, 2000) and it is considered a central factor in most of the prominent theories about irony (Wilson & Sperber, 2012; Pexman, 2008).

It has been proposed that the core function of laughter is to signal play or, more generally, the presence of an incongruity in the context either appraised or wanted to be marked to the interlocutor (Gervais and Wilson, 2005; Mazzocconi et al., 2020). Especially, it has been shown in a corpus data analysis that laughter can also be used specifically to signal incongruities between what is said and what is intended (Mazzocconi et al., 2020). Experimental support of such claim, comes from Bryant (2016) which shows that subjects are more prone to interpret utterances as non-literal when accompanied by laughter. Some authors already highlighted the role that laughter can have in cueing irony by reason of signalling non-seriousness or a negative attitude (Attardo et al., 2003; Utsumi, 2000), but systematic investigations are still lacking.

In the literature on irony, there is a general consensus that interlocutors exploit multiple cues in order to infer the speaker's ironic intent. Experimental evidence highlights the predominant role of contextual factors (especially contextual incongruity) (Ivanko and Pexman, 2003; Champagne-Lavau et al., 2012), but also other factors such as prosody, sociocultural (Rivière and Champagne-Lavau, 2020), and multimodal cues (e.g. facial

expressions, gaze, vocalization etc.) (Deliens et al., 2018) have been shown to play a role. The Constraints Satisfaction Model of irony processing (Campbell and Katz, 2012) proposes that interactants integrate all the available cues as soon as they are relevant, in order to derive a coherent representation of the speaker's intent.

Hereby, we aim to investigate for the first time the role of laughter on ironic intent understanding in interaction with contextual incongruity cues.

Methods

Participants: A gender balanced sample of 120 undergraduate students, French native speakers, will participate in this experiment.

Materials: Twenty stories adapted in French by Champagne-Lavau et al. (2012) from Ivanko and Pexman (2003), controlled for familiarity and plausibility, will be used. Each story comprises a situational context followed by a target sentence (example in Table 1). We will manipulate the incongruity of the context (i.e., strong, weak, no incongruity) in relation to the target sentence. Each story will be presented in the three context conditions followed by the presentation of their target sentence. Each target sentence will be presented either preceded by a speaker's laughter or not. All stimuli will be recorded by a native French speaker actor. Target sentences will be recorded with appropriate prosody to the context, preceded by a short laugh. Only one recording of the target sentences will be selected (after a pilot perception task) as the most unmarked in terms of prosody to be played across all context conditions. Prosodic cues of the target sentences will be therefore kept constant across contexts. For the *no-laughter* condition the laughter will be cut out. Thus, there will be six versions of each stimulus (20 stories x 3 *context* conditions x 2 *laughter* present/absent). The 120 stimuli will be divided into 6 groups of 20 stimuli, according to a Latin square design, so that each participant hears each story only once, in one of the six experimental conditions.

Table 1. Sample stimuli in the three context conditions and two laughter condition

	Type of Context Incongruity		
	No Incongruity	Weak Incongruity	Strong incongruity
Context	Christine and Marie sat the same math exam. Christine studied for 1 day and got 90% in the exam. The next day Marie said to Chantal:	Christine and Marie sat the same math exam. Christine studied for 1 day and got 60% in the exam. The next day Marie said to Chantal:	Christine and Marie sat the same math exam. Christine studied for 1 day and got 20% in the exam. The next day Marie said to Chantal:
No-Laughter cue	Christine is a clever student.	Christine is a clever student.	Christine is a clever student.
Laughter cue	<laugh> Christine is a clever student.	<laugh> Christine is a clever student.	<laugh> Christine is a clever student.

Procedure: Participants will take part in the experiment online and will be invited to use headphones. They will be instructed to listen to each story, and to judge as quickly as possible if the final target utterance, presented after a 400ms interval, is ironic or not. The experiment will be implemented in PsychoPy (Peirce et al. 2019).

Approach for statistical analysis

We will apply Linear Mixed effect Models (LMM), having context and laughter (present/absent) as predictors and ironic responses (GeneralisedLMM) and response time (LMM) as dependent variables, with subjects and items as random factors.

Hypotheses

Considering laughter as a cue for speaker's mental states and non-literal intentions, and in light of Bryant's (2016) results, we expect to observe interactions depending on the contextual incongruity manipulation and the presence/absence of laughter.

Specifically, we expect laughter not to have an important impact in the strong contextual incongruity condition, since contextual incongruity has been consistently identified as the strongest factor for ironic interpretation (Ivanko and Pexman, 2003; Champagne-Lavau et al., 2012; Rivière et al. 2018). However, in line with Utsumi (2000)'s model, and with results from Burgers et al. (2012) that show that co-presence of multiple cues reduces irony processing complexity, we do expect a speed up of the response.

We expect though to see an important effect of laughter in the case of weak incongruity, skewing responses towards an ironic interpretation.

We predict laughter to possibly cue irony, even in the neutral context condition, by reason of being informative about the speaker's appraisal of an incongruity or about the intention to signal it to the partner.

In addition, we seek to provide a comparison with Deliens et al. (2018): they observed participants bypassing contextual cues, relying on somewhat less reliable and definite cues as prosody and facial expressions at the expenses of accuracy, by reason of being easier and faster to process than full-fledged contextual information.

The implications of our project would be three-fold:

1. Highlighting laughter as an informative cue of the speaker's attitude and therefore contributing to the identification and understanding of the combination of constraints which a listener is sensitive to when interpreting an utterance as ironic. We aim at refining the Constraint Satisfaction Model of irony processing, quantifying the relative strength of the constraints considered (laughter and contextual incongruity).
2. Our data will offer good material to test several predictions based on Utsumi (2000)'s model of irony processing, both in terms of detection and speed of processing as briefly presented in the hypotheses section.
3. If laughter is found to have an effect on speaker's attitude attribution, our results would provide further evidence for the claim that laughter is an important cue of mental states exploited by interactants in order to derive inferences and support pragmatic reasoning (Mazzocconi et al, 2020; Ginzburg et al. 2020). Our data will therefore highlight the need to integrate laughter in frameworks aimed at modelling meaning processing in interaction.

We leave to further studies the exploration of laughter in interaction with other ironic cues such as prosody and facial expression.

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