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Does laughter play a role in irony comprehension?

Chiara Mazzocconi, Caterina Petrone, Maud Champagne-Lavau

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Laughter performs multiple pragmatic functions in conversation (Glenn et Holt, 2013). It is often used to show enjoyment of pleasant incongruities (c.a. humour), to smooth dialogue acts having a potential negative effect on the ideal flow of a conversation (e.g. disagreement, asking a favour), or to show pleasant appraisals (e.g., accompanying a compliment) (Mazzocconi et al. 2020). Furthermore, laughter can be a cue of non-literal intentions (Hoicka and Gattis, 2008) signalling incongruities between what is said and what is meant (e.g. irony or scare quoting; Schaffer 1982; Haiman, 1998; Ginzburg et al., 2020), marking non-serious or negative speaker's attitudes (Attardo et al., 2003; Utsumi, 2000). Bryant (2016) extracted ironic utterances from natural friendly conversations and presented them out of context, with or without the adjacent laughter. The presence of laughter increased listeners' judgements of non-literal speaker's meaning. However, we still don't know whether laughter cues ironic interpretation of sentences when embedded in context.

Contextual incongruity in relation to the target sentence has been consistently identified as the most important factor for ironic interpretation (Ivanko and Pexman, 2003; Champagne-Lavau et al., 2012; Riviere et al. 2018). Burgers et al.'s (2012) results show, in line with Utsumi's (2000) model, that the co-presence of multiple cues reduces the complexity of irony processing. Deliens et al. (2018) demonstrates that the presence of other multi-modal markers of irony, such as prosody or facial expressions, can outweigh the presence of more reliable contextual cues, in the interest of faster, yet less accurate, responses.

We hypothesized that laughter would lead towards ironic responses, especially when contextual cues are not very strong (i.e. weak incongruity with the target sentence). Furthermore, laughter will facilitate processing and induce faster reaction times in the case of strong incongruity, as in this case it will be a redundant cue for irony interpretation.

Methods

Ninety-one French native speakers have participated in the experiment so far, out of 120 estimated (mean age 20.29 sd 3.25; 19 men). All participants gave informed consent and got 10€ compensation.

Our stimuli were constituted by twenty-four stories adapted into French by Champagne-Lavau et al. (2012) from Ivanko and Pexman (2003). Each story included a situational context followed by a target sentence. We manipulated the contextual incongruence with respect to the target sentence in *strong* ("Marine is taking a maths exam. She has revised a lot and she gets 5/20 in the exam. Thomas says:"), *weak* ("Marine is taking a maths exam. She has revised a lot and she gets 11/20 in the exam. Thomas says:") and *no incongruity* ("Marine is taking a maths exam. She has revised a lot and she gets 20/20 in the exam. Thomas says:"). A French actress uttered both the contexts and the targets. Targets were preceded by a short laugh ("*<laugh>/Marine is a clever student.*"). Only the targets embedded in the *no incongruity* context (i.e. sincere prosody) were selected to be played across all contextual conditions. Targets were validated as being reliably interpreted as non ironic in a previous perception study. Each target sentence was presented either with or without the short preceding laugh. Thus, there were 6 versions of each story (24 stories x 3 context conditions

x 2 laughs present/absent), for a total of 144 stimuli. The stimuli were divided into 6 groups of 24 stories, in a Latin square design, so that each participant heard each story only once.

Participants listened to each story and judged as quickly as possible whether the final target statement was ironic or not. Response type (ironic/non-ironic) and response times (RTs) were collected for each item.

Results

We performed a Generalised Linear Mixed Model on participants' responses (ironic/non-ironic), with subjects and items as random factors. The effect of *Context* was significant, with ironic responses being more likely in the *weak* than in the *no incongruity* condition ($E=2.7361$, $SE=0.2183$, $z=12.53$, $p<.001$) and even more so for *strong incongruity* ($E=4.6344$, $SE=0.2617$, $z=17.71$, $p<.001$). Neither the effect of *Laughter* nor its interaction with *Context* were significant (Figure 1).

Furthermore, we run a Linear Mixed Effect Model on log-transformed RTs. The model had the same fixed and random structure as for the GLMM model. We observed a significant effect of *Context*, with slower RTs in the *weak incongruity* condition compared to the other two contextual conditions (*no incongruity*: $E=73.28$; $SE=18.96$; $df=2000.40$; $t=3.865$; $p<.001$; *strong incongruity* $E=123.10$; $SE=18.91$; $df=2000.15$, $t=6.508$, $p<.001$). Neither the effect of *Laughter* nor its interaction with *Context* were significant (Figure 2).

Discussion

Contrarily to our hypotheses, the presence of laughter did not lead to more "ironic" responses and did not affect reaction times. The lack of effects was independent of the degree of incongruity with the preceding context.

Our results have implications for irony and multi-modal language processing models.

The effect of *Context* confirmed previous data on the impact of contextual incongruity on irony detection (Ivanko and Pexman, 2003; Champagne-Lavau et al., 2012) as well as confirming that in the *weak incongruity* condition participants have slower RTs (Riviere et al. 2018). Despite laughter being a potential salient cue of non-literal intentions, we do not observe laughter to outweigh the situational context in the interest of a faster processing (*contra* Deliens et al., 2018), neither to speed up RTs in the *strong incongruity* condition (*contra* Burger et al., (2012) and Utsumi's (2000) predictions). Our data are also in contrast with Bryant (2016), who found that laughter leads to more ironic interpretation of utterances presented in isolation.

The lack of *Laughter* effects on ironic responses when targets are embedded in context can be due to two reasons. First, being laughter a highly multifunctional signal, it might be more ambiguous than other ironic multi-modal markers. Second, similarly to indexicals, the interpretation of laughter is closely tied to the context, so much that it cannot outweigh or interact with contextual processing being influenced by it. This resonates with data on speech processing showing the impact of context on semantic and pragmatic incremental interpretations (e.g. Nieuwland and Van Berkum, 2006; Grodner et al. 2010, Tian et al. 2016).

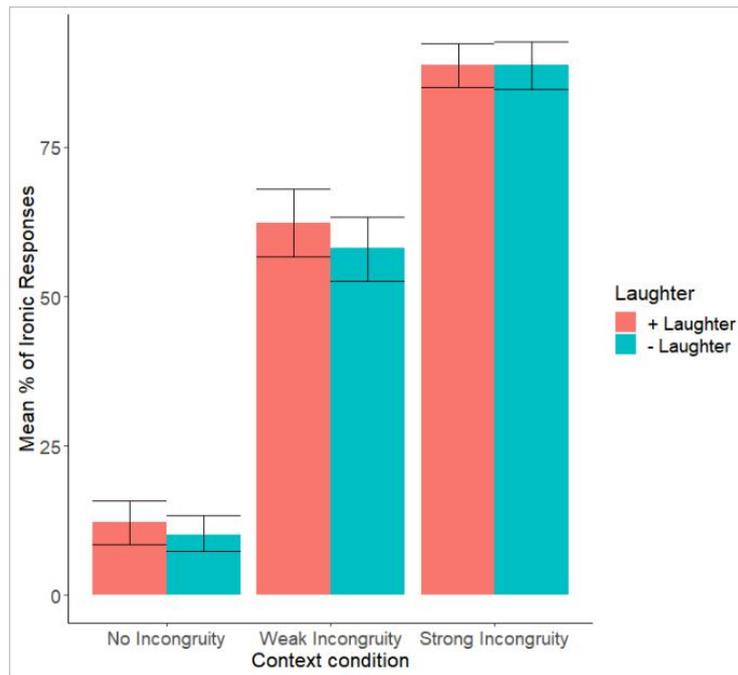


Figure 1 Mean percentages of ironic responses (I) according to Context (No Incongruity, Weak Incongruity and Strong Incongruity) and Laughter (Present/Absent) conditions.

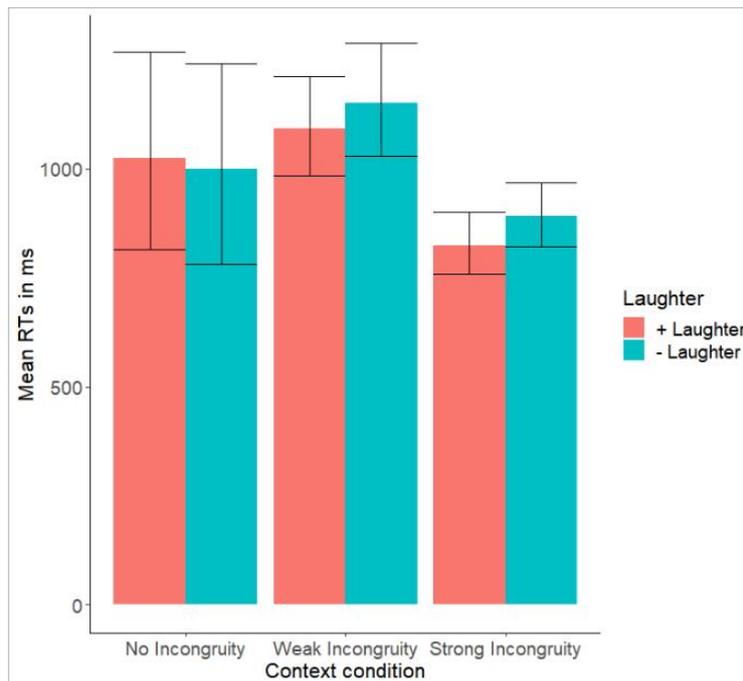


Figure 2 Mean Reaction Times of Ironic Responses (I) according to Contextual Incongruity and Laughter (Presence/Absence).

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