

Pragmatic skills in aging: the case of irony

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The use of non-literal language, like verbal irony, is deeply embedded in everyday communication and the ability to comprehend it changes across life. According to the echoic mention theory (Wilson & Sperber, 2012), understanding irony amounts to recognize a dissociative attitude. In the 'Contextual echo' example (Figure 1), Cynthia's utterance "Tonight we gave a superb performance" is an example of irony. Cynthia is expressing a dissociative, mocking attitude towards the blatantly false proposition "Tonight we gave a superb performance", that echoes the unfulfilled expectation that the concert would go well. The thought that is echoed can be "uttered", like in the 'Explicit echo' example where the ironic utterance echoes the content explicitly expressed by Lea's preceding statement; but the dissociative attitude can also target some implicitly communicated meaning, like in the 'Implicated echo' example, where the ironic utterance echoes the implicature of Lea's statement, that is that they will sing well. Our first aim is to assess whether the echo's degree of explicitness influence the processing of irony. Second, since research indicates that older adults sometimes struggle in understanding non-literal statements, like presupposition (Domaneschi & Di Paola 2019) or humor (Bischetti et al. 2019), we want to address the question of whether the processing of irony is more effortful in late adulthood and, if so, which underlying cognitive capacities might be responsible. Data collection is ongoing and the study is pre-registered on OSF (https://osf.io/94mys/?view_only=51fecb7acd694eca9b6b4d08cca02a26).

Methods: The experiment requires the participation of 25 young adults (18-29-year-old) and 25 older adults (65-74-year-old). Participants will be administered a series of standardized tests to assess a) ToM (Faux Pas test) b) WM (Alpha span test) c) Autistic Quotient. The experimental study is a self-paced reading task. Each participant will be presented with stories adapted from the material of Spotorno & Noveck (2014): 15 ironic stories (5 with contextual echo, 5 with implicated echo and 5 with explicit echo), 5 literal stories, 10 decoys and 20 fillers (in a randomized order). Participants answer a yes/no comprehension question at the end of each story. An example of stories is given in Figure 1.

Predictions: We expect overall slower reading time for ironic statements compared to literal ones and greater difficulties in the older adults group for ironic statements. We predict that our manipulation of the echo will have an effect on the processing of irony, and that reading times will be faster when the echo is explicit compared to when the echo is implicated (a stronger effect for older adults). We also expect that performance in our ToM task will predict reading times for ironic statements, with lower performance resulting in slower reading times. The presence of an implicated echo will exacerbate the difficulties. Moreover, we expect a positive correlation between the Autistic Quotient score and the difference between the reading times in the ironic and literal conditions. Finally, we expect that WM score will predict longer reading times for ironic statements when the implicitness of the echo poses higher cognitive demands.

Analysis plan: First, we plan an evaluation of the group differences for neuropsychological data using a Wilcoxon signed- rank test. Then, we will proceed with a Pearson correlation coefficient test and analysis of variance to understand the relationship between the different measures (Clark, et al. 2010). The principal component analysis will be used to further assess their relationship. To understand the effect of the predictors on the reading time we will run a (Generalized) Linear Mixed-Effects Model with reading time as response variable, (Age Group x Type x Echo) as categorical predictors, test scores of neuropsychological data as continuous (or ordinal) predictors, and subject ID and items as random effects. All relevant interactions (both fixed and random) will also be assessed. The models will be fitted in R using the 'lme4' package (Bates et al. 2015). The (G)LMM will be simplified by removing one non-significant interaction at a time (and then, possibly non-significant main effects) on the basis of the Analysis of Deviance (LR Tests), until the optimal model is reached.

Cynthia et Léa à l'opéra

Contextual Echo

Original (French)

Cynthia et Léa chantent dans le même opéra.
Le soir de la première, elles se retrouvent au théâtre.
Léa déclare: «Le spectacle commence pile à l'heure.»
Durant la représentation, elles font beaucoup de fausses notes.
Après le spectacle, Cynthia dit à Léa:
«Ce soir on a fait une performance magistrale.»
Tandis qu'elles se démaquillent, les deux filles continuent à parler du spectacle.

English translation

Cynthia and Léa sing together in the same opera.
On the night of the premiere they meet at the theatre.
Léa says: "The show begins exactly on time."
During their performance they often sing off key.

After the show, Cynthia says to Léa:
"Tonight we gave a superb performance."
As they take off their make-up they continue to discuss the show.

Explicit Echo

Cynthia et Léa chantent dans le même opéra.
Le soir de la première, elles se retrouvent au théâtre.
Léa déclare: «Ce soir nous chanterons de façon magistrale.»
Durant la représentation, elles font beaucoup de fausses notes.
Après le spectacle, Cynthia dit à Léa:
«Ce soir on a fait une performance magistrale.»
Tandis qu'elles se démaquillent, les deux filles continuent à parler du spectacle.

Cynthia and Léa sing together in the same opera.
On the night of the premiere they meet at the theatre.
Léa said: "Tonight we will sing superbly."

During their performance they often sing off key.

After the show, Cynthia says to Léa:
"Tonight we gave a superb performance."
As they take off their make-up they continue to discuss

Implicated Echo

Cynthia et Léa chantent dans le même opéra.
Le soir de la première, elles se retrouvent au théâtre.
Léa déclare: «Ce soir, notre public se souviendra de nous.»
Durant la représentation, elles font beaucoup de fausses notes.
Après le spectacle, Cynthia dit à Léa:
«Ce soir on a fait une performance magistrale.»
Tandis qu'elles se démaquillent, les deux filles continuent à parler du spectacle.

Cynthia and Léa sing together in the same opera.
On the night of the premiere they meet at the theatre.
Léa said: "Tonight, the public will remember us."
Finally, they sang off key.

After the show, Cynthia says to Léa:
"Tonight, we gave a superb performance."
As they take off their make-up they continue to discuss the show.

Literal

Cynthia et Léa chantent dans le même opéra.
Le soir de la première, elles se retrouvent au théâtre.
Léa déclare: «Le spectacle commence pile à l'heure.»
La représentation est excellente et les chanteurs sont longuement applaudis.
Après le spectacle, Cynthia dit à Léa:
«Ce soir on a fait une performance magistrale.»
Tandis qu'elles se démaquillent, les deux filles continuent à parler du spectacle.

Cynthia and Léa sing together in the same opera.
On the night of the premiere they meet at the theatre.
Léa says: "The show begins exactly on time".
The show was excellent and the singers were given a long applause.
After the show, Cynthia says to Léa:
"Tonight we gave a superb performance."
As they take off their make-up they continue to discuss the show.

Question

À votre avis, est-ce que la performance est le matin?
In your opinion, do you think that the performance was in the morning?

Figure 1. Example of experimental items.