

Irony comprehension from 4 to 9: the role of language and theory of mind

Introduction. Comprehending irony is a matter of oppositions: between speaker meaning and sentence meaning, and between speaker attitude and the attitude conveyed by the literal meaning of the sentence in question. Hence, understanding irony is a complex skill and it emerges quite late, at about age 6 (Ackerman 1983). Children acquire ironic criticisms (i.e. positive remarks in negative situations) first, and subsequently ironic compliments (negative remarks in positive situations) (Harris & Pexman 2003). Irony comprehension has been linked to 2nd order theory of mind (ToM) abilities (Sullivan et al. 1995). Specifically, the ability to conceptualize 2nd order ignorance has been proposed as a prerequisite to tell a lie from a joke, i.e. to understand irony. Considering that performance on ToM tasks is highly dependent on language skills – especially syntactical skills (Astington & Jenkins 1999) –, it is of particular interest to test if grammatical competence is a predictor of irony comprehension and how grammatical skills and ToM development interact.

Participants. *Preschoolers (PS)*: 21 typically developing (TD) children (10 F, 11 M; Age: M=5y,2m; range=3y,11m – 5y,11m) with normal IQ. *Schoolchildren (SC)*: 56 TD children (25 F, 31 M; Age: M=7y,10m; range= 6y,5m – 9y,4m).

Materials. *Second order ToM*: (both 2nd order false belief and 2nd order false ignorance) modified Italian version of the *Enrique's birthday task* (Hutchins, Prelock & Bonazinga-Bouyea 2014). *Linguistic assessment*: grammatical comprehension task of the battery BVL 4-12 (Marini et al. 2015). *Irony task*: 10 stories introducing a situation and concluding with a remark, literal (4) or ironic (6). Five remarks were compliments and five criticisms. Target items were therefore three ironic criticisms and three ironic compliments. Children were asked three questions about A) understanding of speaker's meaning; B) context, C) recognition of speaker's attitude (see Table 1).

Results. Accuracy was analyzed using mixed logit models. In each analysis, subjects and items were added as random factors. Accuracy was higher for literal stories than for ironic stories ($\beta=2.88$, $SE=0.47$, $z=6.120$, $p<.001$) and for SC than for PS ($\beta=2.62$, $SE=0.57$, $z=4.577$, $p<.001$), with no interaction between factors (see Table 2). As expected, accuracy on ironic criticisms was higher than on ironic compliments ($\beta=1.36$, $SE=0.37$, $z=3.678$, $p<.001$) (see Table 3). Grammatical knowledge was a significant predictor of accuracy ($\beta=0.21$, $SE=0.05$, $z=4.111$, $p<.001$), whereas the effect of second order ToM was marginally significant ($\beta=0.77$, $SE=0.41$, $z=1.878$, $p=.06$).

Discussion. Our results are in accordance to the hypothesis that linguistic competence might constitute a better predictor for figurative language comprehension (Norbury 2005). This statement should not be astonishing, considering that the link between ToM development and language development is not reciprocal, and specifically it is language development that constitutes a foundation for ToM development, and not vice-versa (Astington & Jenkins 1999).

We propose that structural language skills are the strongest building block for irony acquisition (and for figurative language acquisition in general). The relation between language abilities and irony is surely mediated by ToM, but the core component for irony comprehension development should reside in linguistic skills. Further research is needed to identify the key structural features that sustain the development of irony comprehension.

Table 1. Irony task – Example of ironic criticism

Background: Tommy is spending the afternoon playing at Paul’s home. Tommy asks Paul to pick up the Legos to build a big spaceship. At first, Paul does not want to play with Legos because he is worried that after playing his room would be a mess. Tommy promises that he will help Paul to tidy up the room. But when it is time for Tommy to go home, he leaves without helping Paul. The room remains a mess. So Paul tells Tommy

Remark: “Thank you for helping me tidying up!”

Questions: Paul told Tommy: Thank you for helping me tidying up!

A. What did Paul mean? Paul meant that: Tommy helped him/Tommy did not help him

B. How was Paul’s room when Tommy left? - Four choices:






C. When Paul thanked Tommy for his help in tidying up, Paul wanted to compliment or criticize Tommy?

Table 2. Mean % accuracy (and SD) by type of remark in preschoolers and schoolchildren

	LITERAL	IRONIC
PS	92 (26)	54 (50)
SC	97 (15)	85 (36)

Table 3. Mean % accuracy (and SD) by type of irony in preschoolers and schoolchildren

	CRITICISMS	COMPLIMENTS
PS	63 (48)	46 (50)
SC	90 (30)	79 (41)

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