

BAR-ILAN UNIVERSITY

**Enhancing Irony Comprehension in High-Functioning Autistic  
Adolescents with an Intervention**

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## Abstract

Figurative language is a linguistic instrument that enriches communication and allows us to express complex meaning in a concise, interesting and amusing way. The ability to understand and use figurative language involves not only literal understanding but also pragmatics and context analysis (Mackay & Shaw, 2004). One of the prominent features of figurative languages is irony. It requires the listener to differentiate between the speaker's intent and what they are actually saying (Gibbs & Colston, 2007). Until recently, the assumption was that that people with ASD (Autistic Spectrum Disorder) experience difficulties understanding irony due to a specific difficulty with pragmatics (Sperber & Wilson, 1986). However, studies involving adults and adolescents show that people with ASD are capable of understanding irony as long as they succeed in understanding Theory of Mind (ToM) assignments of the second order (Heppner, 1993).

This paper explored the connection between ToM and irony and offered an intervention targeted at enhancing irony comprehension in children with high functioning ASD. To that end, the study used tests that target an understanding of the other speaker's intentions: the first of which is the second order ToM comprehension test while the second one is the Hinting Test. This test was not offered to children with ASD as of yet in the context of comprehending irony.

The paper presented several hypotheses:

- 1) Participants with ASD will have less success understanding irony in comparison to participants with typical development.
- 2) Linguistic abilities and understanding comprehension of the other's intent will contribute to understanding irony in participants with ASD. Specifically, the better the understanding of the other's intent before intervention, the more successful the comprehension of irony is.
- 3) Comprehension of irony in participants with ASD in the intervention group will improve due to the intervention.

- 4) Linguistic abilities and understanding the other's intent will improve in all participants following the intervention. In addition, higher achievements in understanding of other's intent and linguistic abilities due to the intervention, will lead to better irony comprehension.

This study included 70 participants who were divided into three groups; a research group including 20 high functioning children with ASD (ages 14-20) who experienced an intensive intervention; 25 children with ASD (ages 11-18) who experienced superficial intervention and 25 children with typical development (TD) (ages 10-14) who experienced superficial intervention. The groups were divided according to gender, vocabulary level and naming abilities. Subjects were given an explanation about the purpose of the test and its protocol. The parents of autistic children filled out a questionnaire (Social Communication Questionnaire) (SCQ) regarding social behavior and in order to validate the diagnosis. The participants went on to evaluate their understanding of other (ToM, Hinting test) and took a test measuring their understanding of irony.

The participants of the research group participated in a structured intervention during which they were taught several kinds of irony, using everyday examples with the use of video clips, comics and short texts. In the test-group the participants underwent a superficial intervention consisting of one meeting, 45 minutes long, while the participants watched the same videos and were asked to rate their level of enjoyment.

The results of the research confirmed the initial hypothesis. The results suggest that understanding irony among the ASD groups (approximately 64% understanding) was indeed substantially lower than the TD group (82%). The second hypothesis, assuming that understanding of the other and linguistic abilities will contribute to irony comprehension in participants with ASD.

This hypothesis was only partially realized. The findings of the regression analysis revealed that ToM (unlike Hinting) contributed to

participants with ASD's comprehension of irony. Regarding linguistic abilities; the higher the naming ability prior to intervention, the higher the comprehension of irony.

The third hypothesis argued that ASD participants would improve their comprehension of irony following an intervention. As far as differences of achievements prior and after the intervention plan, the participants with ASD showed a significant improvement in understanding irony in comparison to TD participants who showed no improvement.

The final hypothesis suggested that all participants will acquire a better understanding of the other's intent and linguistic abilities due to the intervention. In addition, the larger the change in understanding the other's intent and linguistic abilities, the comprehension of irony will improve. This hypothesis was confirmed. The findings point out that the larger the change in the ToM test (but not Hinting) was due to intervention, the higher the percentage of participant's improvement in the comprehension of irony. Meaning, the intervention program was proved effective by causing an enhanced understanding of the other, as seen in the ToM test.

The major findings of this paper are the following: Firstly, an intervention is capable of improving the comprehension of irony in children with ASD. Moreover, targeted exposure to ironic content can improve irony comprehension and can also improve irony comprehension in this population, as observed in the superficial intervention group. In addition, the intervention targeting irony comprehension also resulted in a better understanding of the other's intents. Meaning, all groups improved their performance in the ToM and hinting tests.

Secondly, linguistic and ToM abilities are major contributors to the ASD population's understanding of irony. Prior to intervention, the higher naming abilities and Tom scores, irony comprehension was higher in scores. After the intervention, the lower the naming abilities were the larger the

improvement was. That is to say, those participants with lower base data benefit from the intervention much more. In addition, the higher the change in the ToM test, the larger the improvement due to the intervention. For typically developed population, irony comprehension intervention can improve the ability to understand the other's intention, as shown in the hinting test. Meaning, these participants experienced transference of the content and improved their ability to understand the other.