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Metaphor and Irony comprehension in typically developing school children: a pilot study

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Abstract. This study aimed to analyse irony and metaphor comprehension of European Portuguese school age children and analyse some of their individual differences, investigating if such factors may play a role in the comprehension of these two language elements. Two European-portuguese versions of stories from the instrument 'Stories from Everyday Life' were used to assess irony and metaphor comprehension in a sample of 30 children with 8 years in a Portuguese private educational institution. Individual differences (e.g., gender, number of siblings, parents' educational levels and family history of speech and/or language disorders) were also considered.
Children were able to understand metaphors and irony, as previously observed in other studies (e.g. Dews & Winner, 1997; Özçalışkan, 2007; Özçalişkan, 2005; Özçalışkan, 2007; Stites & Özçalişkan, 2013 Pexman & Glenwright, 2007). Results regarding individual differences on children's performances showed that: i) male children performed better in both stories; ii) two children who presented a family history of speech and/or language disorders obtained lower scores than their peers; iii) two children whose parents had lower educational level than other families of participants performed worse than their peers; and iv) children who had more siblings performed better in both stories.
Children's performances on both stories were positively correlated. No significant gender differences were found regarding irony and metaphor comprehension, however, a slight advantage was found in male children. The number of siblings was positively associated with metaphor and irony comprehension. More research is needed to clarify the influence of developmental and social variables in metaphor and irony comprehension.
Keywords: Irony comprehension, Metaphor comprehension, Metalanguage.

[es] Comprensión de metáforas e ironías en escolares con un desarrollo típico: un estudio piloto

Resumen. Este estudio tuvo como objetivo analizar la comprensión de la ironía y la metáfora de los niños portugueses en edad escolar y analizar algunas de sus diferencias individuales, investigando si tales factores pueden jugar un papel en la comprensión de estos dos elementos del lenguaje.
Se utilizaron dos versiones portuguesas de historias del instrumento "Historias de la vida cotidiana" para evaluar la comprensión de la ironía y metáfora en una muestra de 30 niños de 8 años en una institución educativa privada portuguesa. También se consideraron las diferencias individuales (e.g., género, número de hermanos, nivel educativo de los padres e historial familiar de trastornos del habla y / o lenguaje).
Los niños fueron capaces de comprender metáforas e ironías, como se observó anteriormente en otros estudios (e.g., Dews & Winner, 1997; Özçalışkan, 2007; Özçalişkan, 2005; Özçalışkan, 2007; Stites & Özçalişkan, 2013 Pexman & Glenwright, 2007). Los resultados con respecto a las diferencias individuales en las actuaciones de los niños mostraron que: i) los niños varones desempeñaron mejor en ambas historias; ii) dos niños que presentaban antecedentes familiares de trastornos del habla y / o lenguaje obtuvieron puntuaciones más bajas que sus compañeros; iii) dos niños cuyos padres tenían un nivel educativo más bajo que otras familias de los participantes se desempeñaron peor que sus compañeros; y iv) los niños que tenían más hermanos se desempeñaron mejor en ambas historias.
Las actuaciones de los niños en ambas historias se correlacionaron positivamente. No se encontraron diferencias de género significativas con respecto a la ironía y la comprensión de metáforas, sin embargo, se encontró una ligera ventaja en los niños varones. El número de hermanos se asoció positivamente con la comprensión de la metáfora y la ironía. Se necesita más investigación para aclarar la influencia de las variables sociales y del desarrollo en la comprensión de la metáfora y la ironía.
Palabras clave: comprensión de ironía, comprensión de metáforas, metalenguaje.

Sumario: Introduction, Irony, Metaphor, Method, Participants, Material, Procedures, Data analysis, Results, Discussion, Conclusion, Funding and Conflict of Interests, References.

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Introduction

In order to succeed in a communicative process, all contextual, linguistic and social factors that interfere with interpretation and production of language must be taken into account (Loukusa, Mäkinen, Kuusikko-Gauffin, Ebeling, & Leinonen, 2018). This sociopragmatic inference makes it possible to understand statements based on contextual information and is essential for irony and metaphor comprehension (Adams, Lockton, & Collins, 2018).

Human communication depends on human ability to read one's intentions, and communication depends on our ability to attribute mental states to ourselves and others. This means that the interpretation of each statement involves a complex ability of mental states, attribution termed Theory of Mind (ToM), from this view ToM difficulties can lead to communication skills being impaired as well (Sperber, D.; Wilson, 2008). Pragmatic deficits are evident in individuals with Autism Spectrum Disorder (ASD) (Hale & Tager-Flusberg, 2005), and ToM difficulties intensifies taking into account the ability to engage meaningfully in conversations.

The Relevance Theory highlights the importance of the speaker's intention in communication as a means of understanding ambiguous language; and the interpretation of each statement is made by focusing on relevant contextual information (Loukusa et al., 2018; Szücs, 2014). When utilizing figurative language, the speaker's intention is to use an indirect form of expression; the listener must comprehend the meaning behind that expression (Sperber & Wilson, 1986) In order to communicate effectively, individuals must be able to detect ambiguities presented in the message; this is done by understanding what is communicated linguistically and incorporating other information from the communicative context and from the interlocutor viewpoint (John, Rowe, & Mervis, 2009; Nilsen & Graham, 2012)

Typically-developing children acquire first-order false beliefs (a fundamental ToM skill) between the ages 4 and 5; however, ToM delays have been seen in children with ASD (Baron-Cohen, Leslie, & Frith, 1985) and those with Developmental Language Disorders (DLD) (Bishop, Snowling, Thompson, & Greenhalgh, 2017; Muter, 1998). Farrar et al (2009) studied developing language and ToM in a group of children with DLD and found a relationship between overall language and ToM, with vocabulary and general grammatical development as the best predictors of ToM capacity.

Children with DLD have difficulties with metaphor comprehension; such issues are in line with their general language difficulties and overall linguistic competence (Bühler, Perovic, & Pouscoulous, 2018). Children with DLD are a heterogeneous group described as having difficulties in language and social interaction and deficits in social competence, despite normal intelligence and lack of hearing or neurological issues (Bishop, 1997, 2017). So, it is not surprising that these children present difficulties in understanding metaphors, considering the difficulties of vocabulary and semantic representations they typically suffer (Norbury, 2005).

Linguistic development is intrinsically related to biological, environmental, social and cognitive factors (Gurgel, Vidor, Joly, & Reppold, 2014; Oliveira, Flores, & Souza, 2012). A study focussed on the specific role that siblings play in ToM development (Dunn, Slomkowski, & Beardsall, 1994). These authors found that children provide a distinctive learning relationship for their siblings in innumerable forms of behaviours and emotions that are shared between them (e.g. affection, conflict) (Dunn, Slomkowski, & Beardsall, 1994). Another study found that conversations between children and their siblings predicted ToM performance and also that the occurrence of mental state terms used on conversations were higher between siblings than between friends (Hughes, Lecce, & Wilson, 2007). Research has shown that ToM and language development are closely connected and influenced by environmental factors (Stanzione & Schick, 2014).

In everyday communication, it is essential to be able to understand figurative language such as metaphors and irony (Capelli, Nakagawa, & Madden, 1990). The comprehension of figurative language is nonliteral; this means that the language user must go beyond the literal statement in order to infer the communicative intent (Titone & Connine, 1999); this aspect is what makes the processing of figurative language more demanding (Levorato & Cacciari, 2002). Figurative language comprehension gets progressively more complex during childhood, adolescence and adulthood (Nippold, 1988). However, in development, irony comprehension emerges later than other forms of figurative language, such as metaphors (Andrews, Rosenblatt, Malkus, & Gardner, 1986). Irony would require a higher level of ToM understanding; this might be challenging for many school-aged children (Saban-Bezalel, Dolfin, Laor, & Mashal, 2019).

Metaphor and irony differ not only in their primary functions and structures but also in the skills used to understand them: metaphor is considered a logical-analytical task in which it is necessary to recognize the linguistic elements linked thereto. The understanding of irony is a socio-analytical task in which one tries to recognize the beliefs and attitudes of the speaker (Winner, 1997).

Metaphors cannot be fully understood or used properly without comprehending first-order false belief; it is possible to establish associations with false belief tests in which thinking about a person's belief is crucial (and in which reality alone does not serve to follow the situation). In metaphors the speaker's intention is vital, and the literal meaning of a statement is not sufficient for understanding. However, irony is described as being more complex, requiring an understanding of second-order mental states (Sperber & Wilson, 1981); chiefly, it would be necessary to distinguish the ironic utterance from a mistake or a lie. In fact, irony is used to send messages in an indirect and sometimes humorous or censure way (Saban-Bezalel et al., 2019).

Kaland et al (2002) study aimed to determine if children and adolescents with level 1 ASD would be competent infering mental states in a 'naturalistic' story context. The authors used the instrument 'Stories from Everyday Life', a test that included 13 pairs of different categories of stories (e.g. white lies, figure of speech, misunderstanding, double bluff, irony, persuasion). Two groups of children were assessed (children and adolescents with level 1 ASD and a control group). Results showed that only one child in the control group answered incorrectly in the metaphor comprehension of the story 'Castles in the Air' (metaphor comprehension). However, in the group of children with level 1 ASD, they interpreted the metaphorical and ironic comprehension literally (Kaland et al., 2002).

Irony

Irony is a type of statement in which the literal and intentional meaning of the speaker does not coincide. Human beings are experts in communicating indirectly their attitudes and opinions in order to express the great complexity of interpersonal relationships (Harris & Pexman, 2003). Children's acquisition of irony comprehension starts between the age of 5 and 6 years (e.g. Dews & Winner, 1997). Other studies suggest that children acquire irony comprehension from only 6 to 10 years of age (Pexman & Glenwright, 2007). Children initially recognize that a statement seems incongruous with their context of conversation before developing the ability to distinguish the difference between a lie and irony. Subsequently the child understands the intended meaning before understanding the ironic intent (Filippova & Astington, 2008).

Metaphor

The metaphor comprehension implies the activation of concepts relevant to its interpretation as well as the suppression of irrelevant concepts (Gernsbacher, Keysar, Robertson, & Werner, 2001; Rubio Fernandez, 2007). To properly understand metaphors, it is necessary to activate the information relevant to its interpretation and to suppress irrelevant information. When metaphors are presented in a non-contextualized way, their understanding is analogous to a problem-solving process in which common cognitive processes are involved (Johnson & Pascual-Leone, 1989).

Concerning the development of the metaphor comprehension, the ability to understand more complex metaphors arises in late childhood, between 9 and 12 years of age (Özçalışkan, 2007). However, studies have revealed that 6-year-old children showed a capacity for metaphorical understanding (Waggoner, Palermo, & Kirsh, 1997). Some studies even suggest that preschoolers can comprehend metaphors, if the task is age-appropriate and does not include metalinguistic judgements (Özçalişkan, 2005; Özçalışkan, 2007; Stites & Özçalişkan, 2013).

The aim of this pilot investigation was to apply a preliminary European Portuguese version of two stories from 'Stories from Everyday Life' (that assessed irony and metaphor comprehension) in a sample of thirty 8-year-old schoolchildren and analyse some of their individual differences (e.g. gender, parent's educational level, number of siblings, and familiar background of language disorders), studying if such factors may play a role in the comprehension of irony and metaphors.

Method

Participants

The sample consisted of 30 participants attending a private school in Oporto district, in Portugal; all of presented European Portuguese as their native language. All children were 8 years old (M=8.4; SD=0.4). Subject selection criteria included the following: (i) European Portuguese as the native language; (ii) normal language development according to teacher and speech language pathologist (SLP) assessments (iii) absence of hearing loss, neurological impairment, or other diagnosis that would affect their language impairment. All subjects who attended SLP were excluded.

The sample was composed of 11 (37%) male children and 19 (63%) female children. Data on gestational weeks, birth weight, number of siblings, age of onset of speech and number of siblings of the participants are shown in Table 1.

Table 1. Descriptive Statistics regarding Age (years), Gestational Weeks, Birth Weight (kg), and Number of Siblings.

	n	M	MD	SD	Min.	Máx.
Age	30	8.4	8.7	0.4	8	8.9
Gestational age	30	37.7	38	2.6	37	41
Birth weight	30	3.2	3.4	0.5	1.4	3.9
Number of Siblings	30	0.9	1	0.7	0	2

Considering educational level of parents, it is possible to observe in table 2 that the majority of parents in this study have graduate studies or 12nd grade studies.

Table 2. Frequencies related to educational level of parents.

	N	%
Elemantary Education	1	3
Lower Secondary Education	1	3
12nd Grade	12	40
Graduation	16	54
Total	30	100

Material

The assessment of irony and metaphor comprehension was based on the instrument 'Stories from Everyday Life' (Kaland et al., 2002). This instrument was created to be administered to school-age children and consists of 26 stories (13 pairs), divided into series A and B. The stories include the following themes: lies, white lies, figurative language, misunderstandings, bluff, irony, persuasion, contrary emotions, oblivion, jealousy, intentions, empathy and social blunders.

In each story there is a climax, leading children to ask questions about the content. The control questions were asked to ensure that the participants understood the story. The time it took each child to answer the questions (controlled in seconds) was recorded; an exact transcript of the response provided by the child was derived.

After the author's request for authorization, Stories 1 and 2 were translated. They were translated by a bilingual translator into European Portuguese; the final version was analysed by an expert commitee in order to be unequivocal, understood by the participants, and remain true to the original story.

In order to evaluate the internal consistency of the two stories adapted to European Portuguese (Story 1 and 2 related to the understanding of metaphors and irony) the Cronbach's alpha was analyzed.; its alpha value in relation to Story 1 was 0.59. Cronbach's alpha value for Story 2 was 0.509.

Procedures

Authorization applications were sent to the director of the private educational institution where the study was carried out. Informed consent was collected from all caregivers prior to any data collection (according to the Declaration of Helsinki). The second author administered the instrument to the participants. Each evaluation took place in a separate room free of distractions. The evaluator introduced each story as follows: "*Here are some stories and some questions. I'll read the stories and would like you to listen to them and answer the questions that I will ask you at the end of each story. Let's get started.*" In some cases, participants preferred to read the story aloud.

The page with the stories remained in front of the participant during the reading and the realization of the questions in order to minimize possible memory difficulties, although these were not observed. The children sat in front of the evaluator. All responses were recorded for further analysis. The tests lasted approximately 30 minutes per child.

The order of application of the evidence was as follows: Story 1 – '*Castles in the sky*' concerning the metaphor comprehension and Story 2 – '*Tidying the room*' regarding the irony comprehension. The score assigned was 2 points for a fully correct answer, 1 point for a partially correct answer and 0 for an incorrect answer. The maximum score in Story 1 (metaphor comprehension) was 18 points; in Story 2 (irony comprehension) was 20 points (excluding the control questions, which had no score).

Data analysis

The analysis was performed using the *Statistical Package for Social Sciences - SPSS® for Windows, version 19.0* for statistical analysis of data.

In order to describe and characterize the sample, a descriptive analysis of data was made. Then, a correlation between variables was used using Spermann correlation. In order to evaluate the internal consistency of the two stories, Cronbach's alpha was analysed.

Results

Results show that the scores obtained on metaphor comprehension had a mean score of 13.8 (SD = 4.3). Regarding irony comprehension, mean score was 19.4 (SD = 3.6).

The median score for metaphor comprehension (12) was almost half the median score obtained for the irony comprehension (20), that is, half of the children had 20 points or more in the task of irony comprehension, while half of the children had 12 points or less in the task of metaphor comprehension.

Table 3. Scores obtained in Metaphor and Irony Comprehension.

	N	M	MD	SD
Metaphor comprehension	30	13.8	12	4.3
Irony comprehension	30	19.4	20	3.6

The correlation between scores corresponding to metaphor and irony comprehension was also evaluated and a positive and significant correlation (p <0.01) was observed.

On the topic of participants' performance regarding gender, it is possible to verify that boys presented, on average, better results in both stories (see table 4).

Table 4. Scores obtained in irony and metaphor comprehension regarding gender of participants.

	Male Gender			Female Gender		
	N	M	SD	N	M	SD
Metaphor comprehension	11	14.8	4.4	19	13.1	4.2
Irony comprehension	11	20	3.8	19	19.1	3.5

However, no statistically significant differences were found regarding gender in the two stories evaluated (p> 0.05) that the two participants who reported having a family history of speech/language disorders presented lower scores in both stories evaluated.

Table 5. Scores obtained in the tests of irony and metaphor comprehension in relation to family history of speech and/or language disorders of participants.

	Family History of Speech and/ or Language disorders	N	M	SD
Metaphor comprehension	No Yes	28 2	13.9 11	4.4 1.4
Irony comprehension	No Yes	28 2	19.5 17.5	3.7 2.1

Regarding weeks of gestation, scores obtained between children who presented gestational age of 37 weeks (1 participant) and those that presented full-term gestation, it can be observed the child of less than 37 weeks' gestation scored lower than their his/her peers.

Table 6. Scores obtained in irony and metaphor comprehension regarding Gestational Age of participants.

	Gestational age	N	M	SD
Metaphor comprehension	37 weeks More than 37 weeks	1 29	11. 3 15	1.4 3.4
Irony comprehension	37 weeks More than 37 weeks	1 29	12.6 16.3	2.2 3.4

Concerning number of siblings of participants, it was found that children with one or more siblings obtained, on average, better results on both stories (see table 7).

Table 7. Scores obtained in irony and metaphor comprehension in relation to number of siblings of participants.

	Number of Siblings	N	M	SD
Metaphor comprehension	0 1 2	12 4 14	10.3 12.6 14.5	1.2 3.6 4.8
Irony comprehension	0 1 2	12 4 14	11.3 13.4 15.9	2.6 3.6 4.1

There were statistically significant differences between the number of siblings and irony and metaphor comprehension ($p<0.05$).

Regarding educational levels of parents and scores obtained, as display in Table 8, the two children whose parents had lower literacy (corresponding to elementary and basic education) obtained lower scores (on both stories) compared to performances of children whose parents had higher educational levels.

Table 8. Scores obtained on irony and metaphor comprehension regarding Educational Level of Parents.

	Educational Level of Parents	N	M	SD
Metaphor comprehension	Elementary Education Lower Secondary Education 12nd Grade Graduation	1 1 12 16	10 11.3 13.7 13.7	1.1 1.3 2.4 2.9
Irony comprehension	Elementary Education Lower Secondary Education 12nd Grade Graduation	1 1 12 16	11.6 12.5 15.9 15.4	1.7 2.4 3.1 3.9

Discussion

This study aimed to analyse the comprehension of irony and metaphor in schoolchildren and investigate if some social factors may play a role in their comprehension of irony and metaphors.

The findings in the present study are consistent with previously-mentioned studies (Özçalışkan, 2007; Pexman & Glenwright, 2007; Waggoner et al., 1997). Regarding metaphor comprehension (Story 1), the 8-year-olds were able to understand metaphors (Kaland et al., 2002). Whith respect to irony comprehension (story 2), the children succeeded in this tasks as well (Nakassis & Snedeker, 2002).

The children's performances on the two tasks were positive correlated (suggesting that the skills are in some way interlinked).

Regarding reliability of the instrument, there are currently few psychometric indicators regarding ToM skills and metaphor and irony comprehension (Bosco, Gabbatore, Tirassa, & Testa, 2016). It is important to note that, for samples of 25 to 50 individuals, the Cronbach's alpha is considered acceptable with values starting 0.5 (Davis, 1999); this was verified for both subtests ($\alpha = 0.59$ in Story 1; $\alpha = 0.51$ in Story 2).

There were several differences across various participants groups in the scores obtained in Stories 1 and 2 for some analyzed variables:

i) male children presented better than their female counterparts on both stories;
ii) the two children with a family history of speech/language disorders had lower scores than their peers (who did not have these antecedents);
iii) the two children whose parents had lower educational levels performed worse compared to their peers;
iv) the only premature child obtained lower scores compaired to his/her full-term peers in both stories;
v) children who had more siblings performed better in both stories.

No significant gender differences were found regarding irony and metaphor comprehension; however, a slight advantage was seen in male children over the female participants. The number of siblings was positively associated with metaphor and irony comprehension.

Other studies found that linguistic development is intrinsically related to biological, environmental, social and cognitive factors (Gurgel et al., 2014; Oliveira et al., 2012). Risk factors mentioned in the literature include prematurity, low birth weight, perinatal asphyxia, congenital malformations and infections, low parents' literacy, low sibling number and low socioeconomic status, late onset age, no stimulation, absence of early pediatric care, presence of family history of speech and/or language disorders, and anxiety experienced by parents (Gurgel et al., 2014).

In the present study, it was found that better results were obtained in both stories by participants who had siblings. This factor plays an important role in ToM development, because sibling relationship allows children to share and interact in many forms of behaviours (Dunn et al., 1994). The conversations that occur between children and their siblings have been associated with good ToM skills (Hughes et al., 2007); further, it is known that ToM and language development are closely linked and, as well, influenced by child and environmental factors (Stanzione & Schick, 2014).

The performance of the child with a gestational age of 37 weeks was lower, as it for two children with a family history of speech and/or language impairment. The same occurred for two children whose parents had lower literacy levels than those of other participants; this suggest that these factors may have conditioned these children's' performance on both tasks he performance in both tests. However, it should be noted that this finding (and the statistics behind it) should be approached with caution, given the small number of children in whom this occurrence was verified.

Beyond this aspect, in the current study, no environmental or cognitive variables were taken into account, which, as was previously stated, are determining variables in linguistic development.

It is also important to note that this study was carried out in a private educational institution. This could potentially introduce some bias with respect to, for example, the academic qualifications of parent's educational levels. Regarding this topic, more research is needed to determine which variables may have more influence on irony and metaphor comprehension and whether gender differences, as found in this investigation, are generalizable to other studies.

Conclusion

Results showed that children were able to understand metaphors and irony, as previously observed in other investigations.

Children's performances in both stories were positively correlated. No significant gender differences were found in irony and metaphor comprehension; however, a slight advantage was found in male children. The number of siblings in a family was positively associated with metaphor and irony comprehension. More research is needed to understand the influence of various factors (such as familiar background of language disorders, parents' education level, and weeks of gestation) since the limitations present in this study could not provide more conclusions.

Understanding figurative language is fundamental for successfull communication, for this reason, speech language pathologists should assess figurative language in their clinical practice with children.

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References

Adams, C., Lockton, E., & Collins, A. (2018). Metapragmatic Explicitation and Social Attribution in Social Communication Disorder and Developmental Language Disorder: A Comparative Study. *Journal of Speech, Language, and Hearing Research*, *61*(3), 604–618.

Andrews, J., Rosenblatt, E., Malkus, U., & Gardner, H. (1986). Children's abilities to distinguish metaphoric and ironic utterances from mistakes and lies. *Communication & Cognition*.

Baron-Cohen, S., Leslie, A. M., & Frith, U. (1985). Does the autistic child have a "theory of mind." *Cognition*, *21*(1), 37–46.

Bishop, D. V. M., Snowling, M. J., Thompson, P. A., & Greenhalgh, T. (2017). CATALISE: A multinational and multidisciplinary Delphi consensus study of problems with language development. Phase 2. Terminology. *Journal of Child Psychology and Psychiatry*, *58*(10), 1068–1080.

Bosco, F. M., Gabbatore, I., Tirassa, M., & Testa, S. (2016). Psychometric properties of the Theory of Mind Assessment Scale in a sample of adolescents and adults. *Frontiers in Psychology*, *7*, 566.

Bühler, D., Perovic, A., & Pouscoulous, N. (2018). Comprehension of novel metaphor in young children with Developmental Language Disorder. *Autism & Developmental Language Impairments*, *3*, 2396941518817229.

Capelli, C. A., Nakagawa, N., & Madden, C. M. (1990). How children understand sarcasm: The role of context and intonation. *Child Development*, *61*(6), 1824–1841.

Davis, F. B. (1999). *Educational measurements and their interpretation*. Wadsworth Publishing Company.

Dews, S., & Winner, E. (1997). Attributing meaning to deliberately false utterances: The case of irony. In *Advances in Psychology* (Vol. 122, pp. 377–414). Elsevier.

Dunn, J., Slomkowski, C., & Beardsall, L. (1994). Sibling relationships from the preschool period through middle childhood and early adolescence. *Developmental Psychology*, *30*(3), 315.

Farrar, M. J., Johnson, B., Tompkins, V., Easters, M., Zilisi-Medus, A., & Benigno, J. P. (2009). Language and theory of mind in preschool children with specific language impairment. *Journal of Communication Disorders*, *42*(6), 428–441.

Filippova, E., & Astington, J. W. (2008). Further development in social reasoning revealed in discourse irony understanding. *Child Development*, *79*(1), 126–138.

Gernsbacher, M. A., Keysar, B., Robertson, R. R. W., & Werner, N. K. (2001). The role of suppression and enhancement in understanding metaphors. *Journal of Memory and Language*, *45*(3), 433–450.

Gurgel, L. G., Vidor, D., Joly, M. C. R., & Reppold, C. T. (2014). Fatores de risco para o desenvolvimento adequado da linguagem oral em crianças: uma revisão sistemática da literatura. In *CoDas* (Vol. 26, pp. 350–356).

Hale, C. M., & Tager-Flusberg, H. (2005). Social communication in children with autism: The relationship between theory of mind and discourse development. *Autism*, *9*(2), 157–178.

Harris, M., & Pexman, P. M. (2003). Children's perceptions of the social functions of verbal irony. *Discourse Processes*, *36*(3), 147–165.

Hughes, C., Lecce, S., & Wilson, C. (2007). "Do you know what I want?" Preschoolers' talk about desires, thoughts and feelings in their conversations with sibs and friends. *Cognition and Emotion*, *21*(2), 330–350.

John, A. E., Rowe, M. L., & Mervis, C. B. (2009). Referential communication skills of children with Williams syndrome: Understanding when messages are not adequate. *American Journal on Intellectual and Developmental Disabilities*, *114*(2), 85–99.

Johnson, J., & Pascual-Leone, J. (1989). Developmental levels of processing in metaphor interpretation. *Journal of Experimental Child Psychology*, *48*(1), 1–31.

Kaland, N., Møller-Nielsen, A., Callesen, K., Mortensen, E. L., Gottlieb, D., & Smith, L. (2002). A newadvanced'test of theory of mind: evidence from children and adolescents with Asperger syndrome. *Journal of Child Psychology and Psychiatry*, *43*(4), 517–528.

Levorato, M. C., & Cacciari, C. (2002). The creation of new figurative expressions: psycholinguistic evidence in Italian children, adolescents and adults. *Journal of Child Language*, *29*(1), 127–150.

Loukusa, S., Mäkinen, L., Kuusikko-Gauffin, S., Ebeling, H., & Leinonen, E. (2018). Assessing social-pragmatic inferencing skills in children with autism spectrum disorder. *Journal of Communication Disorders*, *73*, 91–105.

Muter, V. (1998). Uncommon Understanding: Development and Disorders of Language Comprehension in Children. By DVM Bishop. Psychology Press, Hove, UK, 1997. pp. 278.£ 29.95 (hb). *The Journal of Child Psychology and Psychiatry and Allied Disciplines*, *39*(7), 1055.

Nakassis, C., & Snedeker, J. (2002). Beyond sarcasm: Intonation and context as relational cues in children's recognition of irony. In *Proceedings of the twenty-sixth Boston University conference on language development. Cascadilla Press, Somerville, MA* (pp. 429–440).

Nilsen, E. S., & Graham, S. A. (2012). The development of preschoolers' appreciation of communicative ambiguity. *Child Development*, *83*(4), 1400–1415.

Nippold, M. A. (1988). *Later language development: Ages 9 through 19*. Little Brown and Company.

Norbury, C. F. (2005). The relationship between theory of mind and metaphor: Evidence from children with language impairment and autistic spectrum disorder. *British Journal of Developmental Psychology*, *23*(3), 383–399.

Oliveira, L. D., Flores, M. R., & Souza, A. P. R. de. (2012). Fatores de risco psíquico ao desenvolvimento infantil: implicações para a fonoaudiologia. *Rev CEFAC*, *14*(2), 333–342.

Özçalişkan, Ş. (2005). On learning to draw the distinction between physical and metaphorical motion: is metaphor an early emerging cognitive and linguistic capacity? *Journal of Child Language*, *32*(2), 291–318.

Özçalışkan, Şl. (2007). Metaphors we move by: Children's developing understanding of metaphorical motion in typologically distinct languages. *Metaphor and Symbol*, *22*(2), 147–168.

Pexman, P. M., & Glenwright, M. (2007). How do typically developing children grasp the meaning of verbal irony? *Journal of Neurolinguistics*, *20*(2), 178–196.

Rubio Fernandez, P. (2007). Suppression in metaphor interpretation: differences between meaning selection and meaning construction. *Journal of Semantics*, *24*(4), 345–371.

Saban-Bezalel, R., Dolfin, D., Laor, N., & Mashal, N. (2019). Irony comprehension and mentalizing ability in children with and without Autism Spectrum Disorder. *Research in Autism Spectrum Disorders*, *58*, 30–38.

Sperber, D.; Wilson, D. (2008). Relevance: Communication and Cognition. In R. W. Gibbs (Ed.), *A Deflationary Account of Metaphor* (pp. 84–108). New York: The Cambridge Handbook of Metaphor and Thought.

Sperber, D., & Wilson, D. (1986). *Relevance: Communication and cognition* (Vol. 142). Harvard University Press Cambridge, MA.

Stanzione, C., & Schick, B. (2014). Environmental language factors in theory of mind development: Evidence from children who are deaf/hard-of-hearing or who have specific language impairment. *Topics in Language Disorders*, *34*(4), 296–312.

Stites, L. J., & Özçalişkan, Ş. (2013). Developmental changes in children's comprehension and explanation of spatial metaphors for time. *Journal of Child Language*, *40*(5), 1123–1137.

Szücs, M. (2014). The role of Theory of Mind, age, and reception of grammar in metaphor and irony comprehension of preschool children. In *Proceedings of the Third Central European Conference for Postgraduate Students. Budapest: Pázmány Péter Catholic University* (pp. 98–113).

Titone, D. A., & Connine, C. M. (1999). On the compositional and noncompositional nature of idiomatic expressions. *Journal of Pragmatics*, *31*(12), 1655–1674.

Waggoner, J. E., Palermo, D. S., & Kirsh, S. J. (1997). Bouncing bubbles can pop: Contextual sensitivity in children's metaphor comprehension. *Metaphor and Symbol*, *12*(4), 217–229.

Winner, E. (1997). *The point of words: Children's understanding of metaphor and irony*. Harvard University Press.