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The construction of cooperative and inferential meaning by children with Asperger syndrome

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Abstract

This study aims to apply the Gricean theory of conversational cooperation to the example of inferential meaning in the oral speech of children with pragmatic deficit. Firstly, the analysis pays attention to the use of tropic inferences and particularized implicatures in conversation. Secondly, it focuses on the degree of maintenance or flouting with regard to conversational maxims. On average, study participants are 11.15 years old and possess a confirmed clinical diagnosis of Asperger syndrome. Results suggest a rare understanding and production of tropic inferences and particularized implicatures in dialogues, as well as the systematic application of the maxim of quality, the generalized non-fulfilment of the maxim of quantity and different degrees of fulfilment according to the remaining maxims.

Key words

Asperger syndrome, autism spectrum disorder, conversational maxim, cooperation principle, implicature

1. Introduction

The present research sets out to examine the applicability of Grice's theory of conversational implicatures to Asperger syndrome (AS).¹ This autism spectrum disorder (ASD) has been characterized by a lack of understanding and a limited production of implicit meanings in conversation; in other words, people with AS have particular weaknesses in areas of non-literal meaning (e.g., figurative or metaphorical expressions, humour, irony or sarcasm) and tend to use words and expressions literally (McPartland and Klin, 2006; Rodríguez Muñoz, 2013a). Nonetheless, the literature indicates that after certain implicit meanings are learnt, inferences are quickly applied to other contexts (Monfort and Monfort, 2001). Furthermore, these symptoms are coincident with those that define Semantic Pragmatic Disorder (SPD). Indeed, authors like Gagnon, Mottron and Joanne (1997) have questioned the validity of this last diagnostic label.

Such difficulties, which require inferential reasoning, are part of a larger set of pragmatic deficits affecting social interaction, speech and language. Despite showing an appropriate management of grammatical rules, AS has been explained by diverse atypical verbal and non-verbal communicative behaviours. These particularities include pedantic or sophisticated vocabulary, prosodic and kinetic

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¹ Nowadays, there is a problematic issue regarding the label "AS" which was removed from the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)* (American Psychiatric Association, 2014) and is now encompassed within the categories of autism spectrum disorder or social communication disorder. However, participants in this study were diagnosed before this change.

alterations, and other conversational particularities associated with turn-taking agility or conversational participation, among others (Rodríguez Muñoz, 2012; 2013b; 2017).

Human communication presupposes and implies more than simple coding and decoding of linguistic processes. Therefore, it is necessary to pay attention to inferences derived from the extralinguistic context where they are produced and make sense (Surian et al., 2010). According to Grice (1975, 1989), linguistic messages that are uttered by speakers during interactions have to be always interpreted cooperatively by their interlocutors. Thus, the information that both speakers share has to fit to the context in which they are engaged. In this way, Grice theoretically develops his *cooperative principle* from its division into four different maxims that enable effective communication: (1) *maxim of quality*, try to be truthful, and do not give information that is false or that is not supported by evidence; (2) *maxim of relevance* (originally called *maxim of relation*), make pertinent contributions to the discussion; (3) *maxim of quantity*, make your contribution as informative as the purpose of the exchange requires, and give as much information as is needed, and no more; and (4) *maxim of manner*, try to be as clear and orderly as you can, and avoid obscurity and ambiguity.

The cooperative principle and Gricean maxims are conceived below the broader notion of conversational implicatures which, in general terms, serve to link the expression level with the meaning one; that is, they connect the conventional with the non-conventional meaning (Davies, 2007). In particular, Grice (1989) distinguishes two different types of conversational implicature: (1) *generalized conversational implicature*, which is context independent, and (2) *particularized conversational implicature*, which is context dependent and rests in the obvious flouting of a maxim by the speaker. This second type includes non-literal meanings such as metaphorical, hyperbolic or ironic expressions that rely on the speaker's own creativeness, as well as on the context where they are produced.

Idioms and proverbs are tropic inferences that belong to the lexical repertoire of a language; namely, they are figurative uses that have been semantically specialized and lexicalized throughout time, and, therefore, they possess a strong degree of grammatical fixation in language. If we take literally linguistic utterances that really have a figurative nature, we can interpret that the maxim of quality is being broken, since the resulting content is not equivalent to the sum of particular meanings that compose the utterance. However, we can only maintain that the maxim of quality has been broken when speakers present this content as true and, somehow, they require that their interlocutors believe it (Attardo, 1993).

According to Sperber and Wilson (1995), linguistic encoding processes exploit the conventional knowledge that speakers share and allow them to export the representations that they own about a particular domain to another different domain. Nonetheless, inferential meanings are not always based on a shared knowledge or on an encoded system, but they usually depend on the heuristic and reasoning general skills that speakers possess. In fact, inferential processes may exploit any kind of information useful for the interpretation of the message's inherent intentionality (Dascal, 1999).

In most daily communicative exchanges, it is necessary to make inferences in order to disambiguate lexical meaning and to retrieve information about the speaker's attitude. As Gutiérrez Calvo (1999) pointed out, inferences allow the received message to be completed constructively by means of the addition of semantic elements that are not explicit in the verbal message. Thus, inferentiality implies a constructive process in which extradiscursive experience and the speaker's knowledge are necessarily involved (Belinchón et al., 1992).

From the classification proposed by Gallardo (2006), this study takes into consideration two possible types of inferential meaning: (1) conventional implicit meaning (i.e., tropic inferences, idioms) and (2) non-conventional implicit meaning (i.e., generalized and particularized conversational implicatures). While the first type responds to grammaticalization and lexicalization processes that have led to its sociocultural conventionalization, the second one is not related to conventions, but to the fulfilment or flouting of Gricean maxims in conversation (Gallardo, 2006).

For Happé (1993), the communicative particularities that people with AS present are precisely explained by a core deficit in inferential processing when they are asked to interpret linguistic meaning, facing the lexical and grammatical skills that they put into operation while engaged in linguistic encoding processes, which are relatively intact.

The Gricean conception of human communication, understood as a reasoning activity oriented to the fulfilment of different conversational maxims, has proved to be productive in several researches whose objective has been the study of pragmatic phenomena in relation to inferential processing in adults (Brown and Levinson, 1978) and children without language disorders (Ackerman, 1981; Conti and

Camras, 1984; Surian and Job, 1987; Surian, 1991), as well as in populations presenting communicative alterations (Baltaxe, 1977; Bernard-Optiz, 1982; Bishop and Adams, 1989).

In the case of children diagnosed with ASD, we must mention the study that Surian, Baron-Cohen and Van der Lely (1996) carried out. As these authors conclude, children with ASD exhibit more problems when they have to detect pragmatic violations than children without ASD. Furthermore, in this study, the ASD sample showed difficulties at the moment of evaluating all the transgressions for each conversational maxim (quantity, quality, relevance and manner), compared to the control group which only hesitated when trying to recognize the maxim of quantity. Indeed, children with ASD were not able to distinguish between a polite and an impolite response.

In line with Rapin and Allen (1983), we believe that individuals diagnosed with AS inevitably manifest semantic-pragmatic alterations in communication, since this disorder's main symptom is explained by the difficulty that the decoding of relevant meaning of context (maxim of relevance) implies for message understanding. Likewise, in another classic study, Bishop and Adams (1989) observed a persistent trend in subjects with ASD that consists of providing excessive or little information during the interactions; that is, the violation of the maxim of quantity.

Following Grice's (1975) theory of implicature, this study aims to go more deeply into the description of the atypical use of language by which speakers with AS have been characterized. More specifically, we will discuss the fulfilment or flouting of conversational maxims according to their oral speech and in order to achieve further evidence with regard to the particular communicative pattern that these subjects exhibit. Hence, we will try to describe the use of conversational maxims by 20 participants with AS when the content of their utterances implies respecting or breaking them.

Our initial assumptions focus on three basic aspects: 1) a rare understanding and production of idioms and particularized conversational implicatures; 2) a generalized fulfilment of the maxim of quality; and 3) a significant flouting of the maxims of relevance, quantity and manner.

2. Method

2.1 Subjects and corpus

A total of 20 participants with AS took part in this study. The clinical diagnosis of AS was validated by the psychologists who assisted in data collection. All subjects met DSM-IV criteria for AS. We also used the *Social Communication Questionnaire (SCQ)* (Rutter, Bailey and Lord, 2003) to confirm the presence of an autism spectrum disorder diagnosis.

With their parents' consent, participants were videotaped for later analysis. 14 subjects with AS were from Asturias (Spain), while the other six came from Valencia (Spain). Data were collected in a person-to-person way in both geographic areas, thanks to the collaboration of the Asturian and Valencian Asperger associations.

The chronological ages of the speakers with AS were between 6 and 15, with an average of 11.15; 19 of them were male and we only counted one recording belonging to a Valencian female. At the moment of data collection, participants were not under any pharmacological treatment.

The corpus that supports the present research is formed by 20 recordings. Materials are in audio-visual format and the duration is 149.3 minutes. Oral data were transcribed in ordinary orthography using the basic notation conventions of conversation analysis (cf. Appendix).

2.2 Instrument

In order to collect oral data, we designed a graphic support for pragmatic training. The purpose of this instrument was to motivate a semi-oriented and inducted discourse with our participants using different picture stories. The support was composed of six illustrated cards with specific contents and independent questions (cf. Rodríguez Muñoz, 2014). Thus, the function of the images was the same as a conversational script.

2.3 Procedure

The interviews were carried out in different places. The sample was taken in diverse multi-use rooms located in the Asperger Asturias and Asperger Valencia associations. Before the recordings from the designed tasks in the graphic support, we provided the following general instructions to participants:

I am going to show you six illustrated cards and I will pose you different questions about what you see in each picture. For example, I will ask you to put yourself in the place of some the characters or to tell me a short story from the drawings. Please try to refer always to the card number.

We then showed participants each illustrated card and posed the questions that were to be answered orally.

2.4 Assessment

After applying our graphic support for pragmatic training, we assessed two different items according to the oral interventions of participants diagnosed with AS and, with this intention, we calculated the percentage of success regarding the use of Gricean maxims in conversation.

More precisely, we extracted items 6 and 5 from the *Quick Protocol of Pragmatic Assessment (QPPA)*² (Gallardo, 2005; 2006; 2007; 2009), since both items focus on the evaluation of conversational maxims and, as the remaining evaluable units that this instrument incorporates, they are designed for the comprehensive analysis of conversational data in clinical linguistics.

Item 6 divides into five sub-items:

6. His/her conversation (in spite of presenting lexical and/or articulatory mistakes) progresses with relative fluency and respects the conversational rules of cooperation that require information to be:

- 6.1. True (maxim of quality)
- 6.2. Sufficient, neither excessive nor deficient (maxim of quantity)
- 6.3. Clear, specific (maxim of manner)
- 6.4. Relevant, appropriate to conversational topic (maxim of relevance)
- 6.5. Occasionally understood from non-literal meanings (particularized implicatures)

Likewise, it is in our interest to assess item 5, related to sub-item 6.5:

5. When idioms, proverbs and other lexicalized pluriverbal units appear in conversation, they are understood, or even produced, by the speaker (tropic inferences).

After the quantitative assessment, we analysed the most significant oral examples, from a qualitative point of view, where conversational maxims were broken by participants.

3. Results

As shown in Figure 1, except for the maxim of quality that obtains a degree of fulfilment of 90%, the remaining conversational maxims are violated in the oral speech of children with AS.

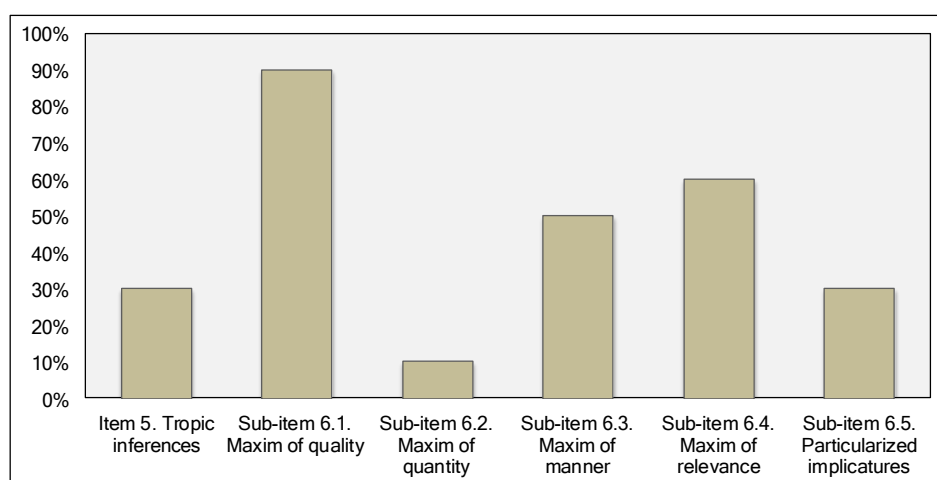


Figure 1. Degree of fulfilment for items 5 and 6

² For a revised version of the protocol, cf. Fernández-Urquiza et al. (2015).

The maxim of quantity is the one that obtains the lowest degree of fulfilment because it is broken by 90% of participants with AS, followed by the maxim of manner which is violated by 50% and by the maxim of relevance, infringed by 40%. The percentage values that refer to item 5 (tropic inferences) and to item 6.5 (particularized implicatures) are totally identical. 30% of subjects with AS are able to decode those emissions that contain idioms, while another 30% understand information that includes figurative meanings.

3.1 Tropic inferences

Following Moreno Campos (2008), we believe that these inferences are not explicit meanings which are activated by speakers during interaction and which derive from a specific context. Among the different types of implicit meaning, we recognize those that rely on the precise use of words and linguistic structures. More specifically, we aim to examine how speakers use idioms and other lexicalized sequences whose total meaning does not correspond to the sum of each word's particular meaning.

In (1) APC uses a metaphorical expression as a resource for describing a character that appears in our graphic support for pragmatic training. Specifically, the child diagnosed with AS expresses the word *mula* ('mule', a sterile hybrid offspring of a male donkey and a female horse) and, this way, he replaces the conventional meaning with the metaphorical one, since this word is applied to a person who carries a heavy burden or who works too much:

- (1) [SA03 APC: 39]

APC: *y este (NÚMERO 15) lleva la bolsa de la compra carga(d)o como una mula §*
and this one (NUMBER 15) is carrying the shopping bag like a beast of burden §

In (2) BFG uses the Spanish verbal phrase *no tener blanca* ('to be broke') when he tries to explain that one of the characters that appears in the graphic support has not got any money. Later, the same participant chooses another verbal phrase *largarse pitando* ('to skedaddle') for describing the moment after a character has stolen a pie. Neither of the expressions' meanings correspond to their literal interpretation which, in the first case, alludes to the colour white and, in the second one, refers to the Spanish verb *pitir* ('to whistle'). Thus, the AS speaker produces these idioms as expected in a typical Spanish speaker:

- (2) [SA04 BFG: 24]

BFG: *veamos, eeh el niño eh va a una tienda en la que venden camiones por un euro, / uno cada- un euro, claro está, / pero el niño no tiene blanca /*
let's see, uuh the kid uh is going to a shop in which lorries are sold for one euro / one each- one euro, it's clear, / but the kid is broke /

- (3) [SA04 BFG: 59]

BFG: *y (LA MADRE) le echa la culpa a la hija en lugar de culpar al hermano que se largó pitando §*
and (THE MOTHER) blames the daughter instead of blaming the brother who skedaddled §

When speaker MBF is talking about a frame of the graphic support where a boy plays a joke on another character, he uses the Spanish locution *de mal gusto* ('in bad taste') (4). The participant with AS understands again and explains the figurative meaning that this expression possesses:

- (4) [SA06 MBF: 209–211]

MBF: *porque, hombre, es de mal gusto eso §*
because, man, that's in bad taste §

ADU: *de mal gusto, ¿en qué sentido? §*
in bad taste, in which sense? §

MBF: *de mal gusto no es porque no sabe bien / sino de mal gusto porque eso no está nada bien hecho §*

in bad taste isn't because it doesn't taste good / but in bad taste because that isn't well done at all §

As we have pointed out in (3), now DLC uses the Spanish word *escopetado* ('to be off like a shot' or 'to dash off') for describing the same situation (5). This word derives from the Spanish noun *escopeta* ('shotgun'). In (6) the idiom *partirse el culo (de risa)* ('to laugh one's ass off') represents another colloquial phrase with metaphorical meaning that, as in the former example, is conveniently produced:

(5) [SA08 DLC: 92]

DLC: (xx xx xx) *aquí (xx) la tarta y luego cuando la madre estaba hablando por teléfono, el guaje va y coge la tarta, se marcha corriendo, escopetado //*
(xx xx xx) here (xx) the pie and later when the mother was talking on the telephone, the dude goes and takes the pie, he's running away, he's off like a shot //

(6) [SA08 DLC: 120]

DLC: *y luego está el guaje partiéndose el culo §*
and later the dude is laughing his ass off §

In (7) we find the Spanish colloquial noun *paliza* ('beating', 'thrashing') with the sense of defeat; thus, this is another figurative use because, literally, it means the act of beating with some kind of instrument that physically hurts:

(7) [SA09 DGM: 14]

DGM: *este, asusta(d)o porque le van a dar una paliza a su equipo §*
this one, scared because they're going to give a beating to his football team §

Finally, SAA introduces the adjective expression *que mata* ('that kills'), with a hyperbolic and metaphorical sense, whose literal meaning is associated with death. However, the AS speaker really wants to say that heat is unbearable, not lethal as its literal sense suggests:

(8) [SA14 SAA: 77]

SAA: *pues que (LA MUJER) tiene un calor (xx) que mata /*
well that (THE WOMAN) has a heat (xx) that kills /

3.2 Particularized implicatures

In contrast with generalized implicatures, particularized implicatures arise from the infringement of conversational maxims, are not lexicalized expressions and depend on the speaker's creativeness. This type of implicature is not very frequent in the oral speech of our participants with AS. Nonetheless, we find one example produced by the speaker identified as BFG when he tries to explain a situation in the graphic support where a child is apparently pursued by a shark, but it is really a joke.

More precisely, in (9) BFG intends to explain how he would feel if someone played the same joke on him. However, his answer is quite disconcerting: *como un oso polar en peligro de extinción* ('like an endangered polar bear'). Indeed, this response relies exclusively on the speaker's creativeness and it does not exist as a Spanish idiom. According to the explanation that BFG gives to the interviewer, he uses this expression as a synonym of *fiero* ('fierce'); that is, a very irritated person:

(9) [SA04 BFG: 71–73]

BFG: *me sentiría como un oso polar en peligro de extinción /*
I'd feel like an endangered polar bear /

ADU: *¡como un oso polar en peligro de extinción!, ¿y eso qué quiere decir? §*
like an endangered polar bear! and what does that mean? §

BFG: *que me sentiría como una fiera ↑ §*
that I'd feel like a fierce beast ↑ §

This metaphorical device, the simile or comparison, is a product of the relationship between the individual and his world, and it is taken to the level of language use, that is, heuristic knowledge.

3.3 Maxim of quality

It is quite usual that the maxim of quality is respected by all the participants with AS. Thus, we find little exception to this dominant trend. For example, in (10) JORC thinks that the substance that a character is putting inside a jar of sugar is cat litter instead of salt, and he is not basing his opinion on any graphic sign that supports this hypothesis:

(10) [SA16 JORC: 54]

JORC: *qu(e)'hay un- /// un niño que está ponien- que está poniendo en la- una- en una caja de azúcar aren- // arena para gatos, y entonces hay una- hay un señor que va a comerse eso, y después / él está- // él está / así como↑ él está asu- él está sorprendido y él está riéndose §*
 that there's a- /// a child that is puttin- that is putting in the- a- in a box of sugar some cat- // cat litter, and then there's- there's aa gentleman that is going to eat that, and after / he's- // he's / like↑ he's fright- he's surprised and he's laughing §

In the same line, we find the answer of APC who in (11) thinks that it is spicy sauce that the joker has put inside the sugar jar:

(11) [SA03 APC: 110]

APC: *que aquí pone- que aquí pone e salsa picante e e el- en el bote de azúcar, é él coge mucho [az úúcar]*
 that here he's putting- that here he's putting ing some spicy y y sauce the- in the jar of sugar, h he takes a lot of [su ugar]

3.4 Maxim of relevance

Although 60% of emissions are pertinent to the conversational topic, it is convenient to take some infractions into consideration. DCF's oral interventions are crossed by several thematic digressions; for example, in (12) this participant does not answer the question that the interviewer poses:

(12) [SA02 DCF: 19–20]

ADU: *sí, y ¿podrían estar viendo todos ellos un partido de fútbol? (DCF SE RÍE) §*
 yes, and could all of them be watching a football match? (DCF LAUGHS) §
 DCF: *me hace un poco de gracia esto, por- por el niño §*
I find this funny, because- because of the boy §

In (13) the same speaker returns to insert a little relevant commentary in turn 112:

(13) [SA02 DCF: 111–112]

ADU: *muy bien, lo estás haciendo muy bien, ¿vale? /// (5'') a ver esta (NÚMERO 5) /*
 very well, you're doing it very well, right? /// (5'') let's see this one (NUMBER 5)
 /
 DCF: *¿sin el micrófono no grabaría? /*
without the microphone wouldn't it record? /

The conversation of APC is paradigmatic in regard to the violation of the maxim of relevance. Repeatedly, in (14) the speaker introduces different types of digressions and the content of his utterances is not based on the questions that the interviewer poses. Furthermore, the explanation that APC offers when ADU asks him, for a second time, if the different characters that appear in the picture story are going to the same place supposes the infraction of the maxim of quality, since the participant does not provide any evidence that supports his statement. In general terms, this is the dynamic that APC follows during his interaction:

(14) [SA03 APC: 62–75]

ADU: *y, a ver, por ejemplo, ¿tú crees que [es posible que toda esta gente esté yendo al mismo lugar?]*

and, let's see, for example, do you think [it's possible that all these people are going to the same place?]

APC: *[aj, aj, (EMITIENDO SONIDOS) / derecho (TOCÁNDOSE EL OJO DERECHO), / izquierdo (SEÑALÁNDOSE EL OJO IZQUIERDO)]*

[aj, aj, (EMITTING SOUNDS) / right (TOUCHING HIS RIGHT EYE), / left (TOUCHING HIS LEFT EYE)]

ADU: *[Álvaro], escúchame §*

[Álvaro], listen to me §

APC: *¿quéé?↑ §*

whaat?↑ §

ADU: *escúchame, mírame, mírame, ¿crees que es [posible?]=]*

listen to me, look at me, look at me, do you think it's [possible?]=]

APC: *[¡jolin!]*

[darn!]

ADU: *=escucha, ¿crees que es posible que toda esta gente se esté di- dirigiendo al mismo lugar? §*

=listen, do you think it's possible that all these people are go- going to the same place? §'

APC: *aam, creo queee sí (RALENTIZA EL RITMO) porque creo que le- porque creo que le van a organizar [una fiesta=]*

huum, I thiiink so (HE SLOWS THE RHYTHM) because I think that- because I think they're going to organize a party [for him=]

ADU: *[vale]*

[right]

APC: *=oo o algo, o van a visitarle para su cumpleaños y él los ha invitado, [piioon] (SEÑALANDO A LA CÁMARA)*

=oor or something, or they're going to visit him for his birthday and he's invited them [piioon] (POINTING AT THE CAM)

ADU: *[y], por ejemplo, ¿podrían ser vecinos que viven en el mismo piso? §*

[and], for example, could they be neighbours that are living in the same building? §

APC: *((xx xx)) power / [((shower sound))]*

((xx xx)) power / [((shower sound))]

3.5 Maxim of quantity

The highest number of violations in the oral speech of participants with AS corresponds to this conversational maxim. Furthermore, it is quite usual that the infringement of this principle implies the transgression of the maxims of relevance and manner. When speakers offer more information than necessary, the content tends to be irrelevant as well. Likewise, we cannot forget that the maxim of manner includes a sub-maxim that requires being brief in conversation.

In (15) DMF has to answer whether the character that appears in the graphic support could be watching a football match on television, but he provides excessive and irrelevant information that is not appropriate for the communicative purpose:

(15) [SA17 DMF: 18–20]

ADU: *[hum], por ejemplo, ¿podrían estar viendo un partido de fútbol? §*

[hum], for example, could they be watching a football match? §'

DMF: *eh, claro, el enfadado así, (xx) dice: vamos, vamos / y en- en la segunda puede ser que sea una peli de terror que hagan ohohoho (CON LAS MANOS EN EL AIRE) lo- los fantasmas, en la tercera / está triste porque igual una- un- un- (PARPADEANDO VARIAS VECES) eh, un marido se- se separa de- [de-]*

uh, sure, the angry one this way, (xx) says: come on, come on / and in- in the second one it's possible that it's a horror film where they do ohohoho (WITH THE HANDS IN THE AIR) th- the ghosts, in the third one / he's sad because perhaps a- a- (BLINKING SEVERAL TIMES) uh, a husband separates him- himself from- [from-]

ADU: *[no], pero estábamos hablando de un partido de fútbol, / vale, sigamos con la número dos, ¿vale? §*
[no], but we were talking about a football match, / well, let's follow with number two, right? §

However, we believe that this maxim is broken not only when the speaker provides excessive information, but when it is insufficient. In (16) we perceive precisely the opposite trend that we observed in (15). Now the interviewer poses the same question to AGC, but he practically responds with monosyllables and does not provide any explanation that supports his point of view:

(16) [SA01 AGC: 20–25]

ADU: *pero ¿y todos están viendo lo mismo? /*
but, and are all of them watching the same? /

AGC: *°(sí)° §*
°(yes)° §

ADU: *¿sí? /*
yes? /

AGC: *creo que sí §*
I think so §

ADU: *ah, vale, y luego, ¿estos niños podrían estar viendo un partido de fútbol? /*
ah, well, and later, could these children be watching a football match? /

AGC: *sí /*
yes /

This laconic style is also manifested in (17); in particular, the interviewer asks the AS participant to tell the story from the graphic materials that we used for conversation. In turn 15 JIS summarizes excessively his oral narration and omits some relevant information about the main character and his actions:

(17) [SA11 JIS: 14–17]

ADU: *cuéntame lo que va pasando en la historia §*
tell me what is happening in the story §

JIS: *pues quee lle gaa a una tienda yy- y no tiene dinero, y va a pedirselo a su abuelita porque quiere comprar un coche (SONRIENDO) §*
well that he comes to a shop and- and he has no money, and he's going to ask his grandma for it because he wants to buy a car (SMILING) §

ADU: *vale, ¿ya está? §*
well, is that all? §

JIS: *°(mm, pues sí)° §*
°(mm, yes then)° §

3.6 Maxim of manner

This conversational maxim is respected by half of the participants. We mark it as negative when we find a stilted and pedantic conversational style (for example, the speaker uses a very specific vocabulary, an overly complex syntax, etc.). Although this principle is usually associated with lexical and grammatical skills, which tend to be unaffected and advanced from an early age in people with AS, this fact may entail the violation of a more general sociolinguistic principle such as the adaptation to context and to interlocutors. In (18), for example, the content of BFG's response is imprecise, and the utterance form is excessively complex:

(18) [SA04 BFG: 49–50]

ADU: *vale, ¿crees que sería posible que toda esa gente se dirigiese al mismo sitio? //*
right, do you believe it's possible that all these people are going to the same place? //

BFG: *eso, hay algunas probabilidades de que-, bueno, de que vayan a ese sitio tod- /*
todas juntas y s-, ¡ay!, mira, hay una posibilidad de que primero desde es- desde
la señora de- acalorada con- con el hombre de la compra haya una pequeña
posibilidad, una diminuta posibilidad de que vayan al mismo sitio y, sin embargo,
sus expresiones son diferentes, lo que quiere decir, no sé, otra cosa /
that, there're some probabilities that-, well, that they're going to that place al- /
all together and s-, oh, look, there's a possibility that first from th- from the
woman of- the overheating woman with- with the shopping man, there's a small
possibility, a diminutive possibility that they're going to the same place and,
however, their expressions are different, which means, I don't know, another
thing /

Likewise, it is necessary to point out that clarity is sometimes sacrificed in favour of other different discursive properties such as correction and precision. For instance, in (19) ACR uses more technical words for explaining the graphic situation:

(19) [SA05 ACR: 108–111]

ACR: *parece que una niña se está asustando porque parece ser que hay un- un tiburón*
o un pez luna en- en [el lago]
it seems that a girl is being scared because it seems to be that there's a- a shark
or an ocean sunfish in- in [the lake]

ADU: *[((°(vale], bien, bien)°)], ¿y luego qué ocurre? §*
[((°(right], well, well)°)], and later, what happens? §

ACR: *y ocurre que es un gracioso↑ / que se había puesto la típica aleta dorsal, / eh,*
// aquí (SEÑALANDO SU ESPALDA) §
and it happens that it's a joker↑ / who had put the typical dorsal fin / uh, // here
(POINTING AT HIS BACK) §

ADU: *[sí, sí]*
[yes, yes]

4. Discussion and conclusion

Although many studies have emphasized that Grice's work is more theoretical than practical (cf. Harpur et al., 2006), throughout the present study we have shown the applicability of Grice's theory of implicatures for the analysis of cooperative and inferential meaning in the oral speech of young subjects with AS. More specifically, we have provided some further information about the communicative style that this population exhibits.

According to the use of tropic inferences or idioms, the results were similar to those that we found after analysing particularized implicatures in conversation. In this context, one important finding is that 30% of participants were able to understand or produce words or expressions that included a figurative or metaphorical meaning. On the other hand, almost all the speakers with ASD respected the maxim of quality. This statement agrees with the *social ingenuousness* that other authors have attributed to this group; in other words, there are those who believe that AS is incompatible with a lie or the linguistic manifestation of falsehood (Sotillo and Rivière, 2001). This sign is also coherent with the *transparent conversation* that characterizes individuals with AS (Gray et al., 1999).

The maxim of relevance obtained a degree of fulfilment equal to 60%; that is, information offered by participants was generally consistent with the conversational purpose, although some difficulties were present in the remaining 40%. However, the maxim of quantity reflected a dynamic of generalized transgression, since only 10% of participants provided sufficient information. This result showed two

different trends regarding the conversational style of speakers with AS: a laconic style versus verbosity,³ which usually entails the violation of the maxim of relevance and manner (Rodríguez Muñoz, 2009), findings that are consistent with previous research (cf. Bishop and Adams, 1989; Paul et al., 2009).

In relation to the maxim of manner, this was respected by 50% of speakers with AS. In this case, we assessed the clarity of the utterances and we observed that, in some circumstances, the explanations offered by participants were more obscure, ambiguous or prolix than expected. This trend is frequently observed when speakers sacrifice clarity in favour of an extreme discursive correction and, as a result, do not adapt to the social situation in interacting with others. According to Barrett (2008), subjects with AS are brilliant according to their correction degree in conversation, but this fact must not be always interpreted as a virtue because it often implies the failure of interpersonal relationships. Therefore, we do not believe that correction has an impact on discursive clarity or communicative efficiency. On the other hand, it might be a socio-communicative obstacle with unfavourable consequences when these people try to connect or empathize with other speakers.

To sum up, from this analysis, it has been possible to verify our initial assumptions about the construction of cooperative and inferential meaning in the oral speech of young individuals with AS: (1) they rarely produce and understand tropic inferences (idioms or proverbs) and particularized implicatures, (2) in general, they respect the maxim of quality; namely, they normally provide true information, and (3) they significantly break the maxims of quantity, manner and relevance, but this trend is not completely generalized.

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³ Braun et al. (2004) have proposed the concept of *psychic tone*. From this, it is possible to differentiate two opposite poles: euphoria or wordiness versus lethargy or avoidance. While the first extreme is associated with left-hemisphere activation, the second one relates to right-hemisphere activity, especially and in both cases, in the structures of the frontal lobe. Precisely, this region of the brain shows anatomical abnormalities and dysfunctions in people with AS (cf. McAlonan et al., 2002).

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Appendix 1: Transcription conventions

ADU:	This turn belongs to 'ADU'. ('ADU' always refers to the adult interviewer).
/	Short pause.
//	Medium pause.
///	Long pause.
↑	Ascending tone.
↓	Descending tone.
-	A hyphen indicates an abrupt cut-off or self-interruption of the sound in progress.
Aaa	Repeated vowels indicate that the speaker has stretched a vocalic sound.
Sss	Repeated consonants indicate that the speaker has stretched a consonantal sound.
((xx xx))	Unintelligible fragment, apparently of two words.
((double brackets))	Text enclosed in double brackets represents transcribed talk for which doubt exists.
CAPITAL LETTER	Words in capitals mark a section of speech delivered more loudly than surrounding talk.
°()°	Degree signs mark a section of speech produced softly or at a lower volume.
sy lla ble	Pronunciation syllable by syllable.
[]	[Left-side brackets indicate where overlapping talk begins.] Right-side brackets indicate where overlapping talk ends.
§	Immediate succession between two turns by different speakers.
=	'Equals' sign indicates the end and beginning of two sequential 'latched' utterances that continue without an intervening gap.
(SMALL CAPITAL)	Small capitals indicate transcriber's comments, not transcriptions.
<i>Italics</i>	Italicized text represents direct speech.