Review Article

Theory of Mind and Language in the Adult: Some Considerations from the Perspective of Speech Therapy

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Abstract

This study shows a review about the relationship between language development and Theory of Mind (ToM) from a pragmatic-functionalist approach, based on a qualitative analysis of the role of textual and contextual categories, as an activity related to social, emotional and cognitive aspects during adulthood. From a functional approach, the study of language and human communication is understood as a process influenced by personal, linguistic, social, and cultural factors. In a pragmatic-functional view, the study of the functions related to ToM is a fundamental task, since communication depends on multiple factors and people with language impairment like people with dementia, can face many troubles in ToM abilities. For these reasons language therapist need to use the MetAphAs protocol in order to assess language in a whole vision. Language therapy techniques aimed at stimulating face-to-face conversation can be planned in different ways. The Programme of Stimulation of Metalinguistic Skills in Theory of Mind for People with Dementia helps to stimulate the metalinguistic performance in the most natural contexts possible.

Introduction

Addressing the issue of language development is a complex task because there are different approaches from which to analyse how and why to study this process. Contradictorily enough, the significant advances in linguistic theory over the last decades, far from appeasing the classic debates around the same, have deepened them. An explanation for this situation may revolve around the fact that when the development of language is analysed, we are necessarily examining a process that involves different fields: linguistics, psychology, philosophy, sociology, neurology, or speech pathology. In short, there are a number of different disciplines that address it with deep interest and which pose a series of essential aspects to be analysed; this becomes patent when we attempt to explain and understand language development and deterioration throughout the human life cycle, while considering the interdependence of the various processes that support it.

López-Ornat states that regardless of the paradigm that guides the activity of the researcher in this area, it is necessary to consider that today this type of research "is often multicultural and multidisciplinary" [1]. This author states that current questions about language development "continue to focus on how babies and young children "break the code" that is, how they manage to make sense of the linguistic sound that surrounds them, and then become competent users of a language". However, today another very fertile area of study is related to the changes that occur in the language and communication of adults [2-4].

This study deals with the relationship between language development and Theory of Mind (ToM) from a pragmatic-functionalist approach, based on a qualitative analysis of the role of textual and contextual categories, as an activity related to social, emotional and cognitive aspects during adulthood [5]. From this perspective, we are required to study language without dissociating it

from its conditions of use, from the context, from the user of a language and from his own experience, since the subject is an active element that makes decisions about her or his own verbal and communicative behavior. It is based on the fact that the form, content and use of language depend primarily on the interaction with the social environment, since that is where linguistic models, norms and rules are taken from, and furthermore, the discourse, and interaction that is achieved through it, are dependent "on the values, ideas and ways of thinking of a social group at a particular time and period" [6-10]

In this respect, van Dijk affirms that language defines a social group or cultural community based on the ideology that a collective possesses [7]. Hence, for this author, there is a similarity between ideology and language: "all ideologies (understood as beliefs) are expressed or formulated in a natural language or semiotic system". Ideology conceives a fundamental group scheme, in which beliefs that self-define a group are organized, which expresses them through language in different contexts and in accordance with a group and individual interests. For this author, ideology is expressed contexts of linguistic action, but "beliefs based on ideology may even affect the context itself".

Each speaker constructs text based on the knowledge they have about their language and the context, which gives them the necessary information to organize or structure their text and make it adequate or functional for the achievement of their communication goals. Now, how do we manage to construct a "functional" text and how do some processes of ToM develop and interrelate with linguistic functions throughout adulthood? These are some of the questions that we seek to analyse in order to clarify the participation of ToM skills in the construction of communicative interactions, specifically in the context of face-to-face conversations and its importance in the development of language functions. In the field of speech therapy, these aspects are

vital for the elaboration of cognitive-communicative programs directed to adults with language disorders. For this reason, the careful study of these is necessary and highly relevant in the current dynamics of the speech therapy discipline that demands the implementation of cognitive-communicative programs models focused on optimizing communication to achieve a better quality of life.

Language, Communication and Theory of Mind (Tom)

Halliday states that the primary function of language is to create coherent, structured texts. Coherence determines the production of different discursive orders, given that the way in which the relationships between elements of reality are captured (internalized); the actors construct what they express linguistically through relationships of coherence. Following from this, coherence determines the use of texts, such as story-telling or historical accounts, descriptions, arguments, among others, which are associated with certain discursive orders, such as narration, exposure, or argumentation. Coherence and cohesion are elements that are related to integrating a text. The first is manifested in the interpretation of a text by an interlocutor, according to the consistent view of the world or rather, according to a shared semantic field that allows us to identify and to interpret the nexuses or links between the sentences or propositions that make up a given text [8].

Cohesion, on the other hand, is represented by the links or connections on the surface of the text; the mechanisms that language possesses to allow to be aware of or to specify coherence. Such tools are called cohesive resources or cohesion phenomena. Van Dijk states that context is a mental model that a speaker has constructed; this allows the link between the general and the specific, between the social and the personal. Determining the definition of the context itself and "the establishment of the relations between linguistic structures and social situations". In this way, the metalinguistic activity selects or constructs the linguistic form that allows a performance adjusted to purposes previously determined by the speaker(s).

The elaboration of texts begins from the very moment a speaker presents her or his communicative intention, and then begins its construction relating this activity to the social. Coherence manifests itself from the communicative intention of the speaker, who follows a plan that materializes through certain mechanisms or operations where cohesion is evidenced in the cohesive resources that reflect that plan; these must be processed by the listener or receiver. It is for these reasons that MacKay, Guerra, Sanhueza & Martínez affirm that human communication "is the product of a set of neurophysiological, psychological, sociocultural and linguistic conditions that develop throughout life" [5,6].

Therefore, when studying communication, as in the case of the present study, the textual and contextual dimensions must be addressed; and aspects related to the forms, meanings and functions of the discourse should be integrated, with data related to the processes that influence the production mechanisms and comprehension of sentences. All this bearing in mind that the meaning of a text depends on multiple variables and on the information shared between the actors, where what each one knows and believes concerning the other, is determinant in the selection of the form. In other words, the communicative exchange is not accidental; it follows a delicate social and cultural programme, regulated cognitively and mainly determined by the contextual. According to MacKay, Guerra, Sanhueza & Martínez human communication "is the product of a set of neurophysiological,

psychological, sociocultural and linguistic conditions that develop throughout life".

From a functional, pragmatic approach, the study of language and human communication is understood as a process influenced by personal, linguistic, social, and cultural factors. The analysis of the discourse and of face-to-face conversation as well as the efficient production of speech, is the result of an interaction between complex cognitive processes such as attention, memory, and perception, language, and knowledge of the world, referring to the so-called executive function or executive functioning. The term executive function refers to a set of mental operations that exert psychological control over various types of behaviour or cognitive processes. This function is identified with a general meta-cognitive capacity, which refers to the ability individuals have to adapt in a novel way to the environment, using "a quota of cognitive and behavioural flexibility required for this purpose". In this process of adaptation, the ability to inhibit predetermined behaviours is highly necessary to be able to adjust the form, content and use of language to the different frameworks of action. The executive function allows people to participate in communicative exchanges tailored to the social demands of each moment, making it possible to adapt the selection of linguistic forms according to the context of action. Metacognition involves all introspective awareness of the states of knowledge and their operations, as well as individual control and planning abilities of our thoughts expressions.

Metacognition includes both the linguistic competence to use oral codes and written codes, together with cognitive competence, so the expression of language through oral or written discourse is a cognitive activity; where both the metacognitive and the metalinguistic play a key role. For this reason, many authors observe a relationship linking executive functions and language [9-21].

Metalinguistic skills are part of the cognitive support necessary for the use of language. According to Gombert, this set of skills allows us to reflect on the language and its rules, and on the control of the production process and its comprehension. These tasks are possible thanks to the executive function. There is no consensus on the definition of this term. According to Buczylowska and Petermann, it is rather a collective name for the higher mental processes responsible for the coordination of cognitive operations. Therefore, it encompasses a series of mechanisms involved in the optimisation of cognitive processes to guide them towards the resolution of complex situations, such as working memory, orientation, attentional resources, inhibition of inappropriate responses in certain circumstances and the monitoring of behaviour relative to the individual's motivational and emotional states. More specifically, these functions bring together the capacities involved in the formulation of goals, the faculties used in the planning of the processes and the strategies to achieve the objectives and the skills to carry out those activities in an efficient manner [22-24].

Komidis et. al., argue that there is a variety of competencies that enable a successful social interaction to take place, and these are grouped in the so-called social cognition. One of these skills is the ToM, which defines a particular cognitive ability: to understand that others have different or similar beliefs, desires, and intentions. Generally speaking, it represents the capacity to take the perspective of another person. These cognitive-social skills are acquired throughout the development, they help to monitor and organize social interactions and adjust to the demands of each context. Also, they allow speakers to become aware that their words may be appropriate or not, and that

therefore, the listener may feel hurt, insulted, or accepted. All this control requires a cognitive and affective support, which manifests itself throughout people's interactions and makes it possible to organize their communicative performance. In face-to-face conversation, the ability to recognize mental states in facial expressions, especially the eyes, is another advanced form of ToM that emerges in adolescence and which is perfected throughout adulthood [25-30].

Following from this, when analysing communication, many aspects must be taken into account, including the quality of the relationship between speakers, their life

Stories, their conversational styles, their personalities, and beliefs. In a pragmatic-functional view, the study of the functions related to the ToM is a fundamental task, since communication depends on multiple factors that are intertwined and define the forms, the topics, and the ways of conducting exchanges, a fact that is more than evident in the face-to-face conversation. Hence ToM makes it possible to judge people's actions, intentions, and motives, regarding states of mind or states of belief, thoughts, knowledge, and desires about a state of things observed in the world. Through it, the intentions and behaviours of others are explained and predicted; and, consequently, it is a necessary skill to be able to reduce the levels of uncertainty while communicating, as well as to adjust to one's intentions and those of one's respective interlocutors. Attributing mental states to the people involved in the interaction (oneself and others) is an essential process in the co-construction of face-to-face conversation. Particularly for the planning, selection, and monitoring of the text to be used (narration, description, among others), that is, to act according to the demands of the context.

Tom and Language Development: Which of the Two is Determinant?

There are numerous references to the study of the relationship between language and ToM. Some have focused on determining whether language is a precursor to the ToM; Or if, on the contrary, it is the emergence of a series of ToM skills that allows language development. There is no single or defined position in this regard. For Farrar & Maag, there is a strong association between early language development and later ToM execution. For other authors, however, it is the ToM that determines language development [26-32].

Beyond this controversy, what seems to be clear is that throughout childhood these two processes are strongly linked and are determinants in the development of phonology, morphosyntaxis, and pragmatics; consequently, both allow effective communicative interaction [33]. The pragmatic-functional paradigm proposes that metalinguistic development requires the general or specific cognitive domain, the "natural meta language"-which allows a flexible and adapted use and control of language to different communicative situations- is only the way in which the executive function manifests itself in the domain of verbal behaviour in a situation of natural use. Communication takes place in real time and requires constant adjustments based on the continuous processing of the context. It requires a precise system that is capable of simultaneously deploying multiple resources, such as attention, working memory, feedback, reasoning, and language.

Within this vision, integrating the perspective of the Self and the other seems to be the starting point of language development. Recognising ourselves as people and being able to recognise the other is the basis of language development throughout our lives. Babies seem to be born with a linguistic support that allows them to communicate basic needs. This activity guarantees the attention of the same, but very soon this support specialises and becomes a dynamic social exchange between mother and child. This exchange allows the mother to achieve several objectives: one of them is the teaching of the mother tongue; another, the construction of an affective relationship with her child and, also, it facilitates effective communication that provides information about the world of the objects and people that surround them.

In our culture, the activity of the Mother-Child dyad is regulated by socio-historical forces, represented in the belief system that defines the style of child-rearing at a given social moment that guides the objective of the M-C interaction, which is to establish the affective relationship (attachment) and to teach the mother tongue as an essential instrument for social relationships. Hence, between the linguistic, the emotional, the cognitive and the social, a complex relationship is established, which enhances the integral development of the child and the adults who interact with it (Valles-González). In later stages of the life cycle, the general executive functioning and, the ability to understand the intentions of one and the other are determinant in the achievement of an adequate communicative exchange; this depends, on putting successfully in place a programme of planning, monitoring, and adjustment of face-to-face conversation.

As already mentioned, the ToM plays a determining role in the construction of the face-to-face conversation. Hernández Sacristán, Rosell-Clariand Serra Alegre consider, in short, that regarding the use of language, ToM is another label to refer to the general capacity of displacement of communicative coordinates. A capacity that according to the aforementioned authors can be evidenced by tasks such as: the ability to talk about things that are not present, the memory of past events, remembrance of past events, anticipation of future events, description of scenes, the ability to contradict or finding antonyms, reading emotions, using fictional language, the ability to lie, and the ability to express sarcasm. Adults deploy such tasks during communicative interactions, and the achievement of the objectives of the conversation largely depends on these. It can be said that the ToM relies heavily on a complex mechanism that allows the tuning and integration of neurological functions that include those executed by the limbic system, psychological processes such as attention or different types of memory (sensorial, semantic, that of work, declarative, episodic, lexical) and social aspects linked to the individual experience of each person. In this respect, it is important to emphasize that the ToM also plays a significant role in defining the type of discursive order to be used. In this way, the characteristics of the context determine how people/users adapt to a range of functions, which in turn determine the selection of a variety of discursive orders: narration, argumentation, description, exposition. The importance of executive functioning in the face-to-face conversation is evident, an activity that we develop in real time and, therefore, requires constant adjustments from the processing we make of a given context. Together, it requires a high-precision system that, as we have seen, allows us to simultaneously deploy various resources, such as attention, working memory, feedback, reasoning, and language.

Disorders of Tom and its Impact on the Communicative Ability of the Adult Person: Some Approaches to Language Therapy

Language and communication may be affected by alterations in cognitive or metacognitive functioning related to ToM. In this way

deficits in the ability to connect knowledge to action affect the emission of spontaneous words, the ability to organize speech and interpret ironies and metaphors. That is, the failures in reading the context can determine an inefficient adjustment to the demands of the context and consequently cause a poor selection of the linguistic contents with which to act.

Poletti, Enrici and Adenzato claim that the ToM has two components. The first, the cognitive, which refers to the ability to make inferences about one's beliefs, desires, thoughts, motivations and intentions. The second, the affective, referred to as the capacity to infer emotions and feelings of the subject and other actors in social and communicative relations. Kipps and Hodges conclude that in general terms the ToM represents the ability to take the perspective of another person and associate it with empathy, affirming that it is a similar ability to this one, because it refers specifically to the understanding of the feelings of another person or the capacity to appreciate their emotional concerns.

Youmans & Bourgeois argue that the cognitive component of ToM is compromised in Alzheimer's disease. Harley, Jessiman, MacAndrew & Astell state that in various types of dementia metalinguistic abilities are affected. Specifically, these authors found that the capacity of people with Alzheimer's to produce adequate definitions is altered. On the other hand, emotional disorders such as schizophrenia, psychosis, bipolar disorder, or depression can change the affective component. Byon & Turkstra state that in adults with acquired brain damage, the use of terms referring to mental states is reduced, which affects the ability to talk. Poletti, Enrici & Adenzato on the other hand, suggest that patients with various degenerative diseases may present different patterns of disorders in ToM related to the histological changes that occur in the brain affected by frontotemporal dementia, vascular or Alzheimer type; these may explain the difficulties posed by ToM in relation to the population affected by dementia and that negatively impact on their communicative possibilities. These functions are compromised in Alzheimer's disease due to cognitive deficits, whereas in frontotemporal dementia, the alterations have both a cognitive and affective basis and can be related to neurochemical disorders. Failures in ToM, result in speech acts becoming increasingly problematic since sensitivity to the needs of the listener diminishes.

Speech analysis and the aspect of the face-to-face conversation is a way of exploring the changes associated with the alterations of the abilities corresponding to ToM, since the effective production of speech is the result of an interaction between complex cognitive processes such as attention, memory, and perception, language, and world knowledge (Arkin & Mahendra). Following from this, communication must be analysed considering many aspects. Beyond the type of damage, cognitive level and general condition of the patients, the quality of the relationship with the interlocutors, their life stories, their conversational styles, their personalities, and beliefs must be taken into account. In a pragmatic-functional view, the study of the functions related to ToM is a fundamental task, since communication depends on multiple factors that are intertwined and define the forms, the topics, and the ways of conducting the exchanges, a fact that is more than evident in face-to-face conversation. From this perspective, evaluating the communication and the language of the population with metalinguistic alterations compel researchers to collect very diverse data. Firstly, those related to the cognitive-linguistic functioning of patients, especially those related to ToM, and secondly, sufficient data to analyse how their regular interlocutors develop communication with them.

To achieve this goal, language therapists should begin the evaluation process with an extensive initial interview where the most relevant information in the patient's medical history is collected together with information about the patient's and the patient's care-taker's communicative skills and abilities. In this regard, it is important to note that for Shakespeare & Clare the way the patient and carer dyad governs the conversation is an early factor that helps to achieve well-being and avoid psychological damage. In response to this need, it is recommended that the "Initial Conversation Protocol" be applied (Valles-González), which consists of a questionnaire aimed at obtaining relevant information about the language activity of the PWD and his or her principal interlocutor, in this case, the carer. Later it is necessary to observe the conversation and analyse it, so there is a need to film different interactions, if possible in different spaces, and to study them carefully, to be able to specify the elements or strategies that both interlocutors use. This analysis allows us to know the opinion of the carer on the communicative activity of the patient and that of the carer, data that can then be compared through the study of interactions. The information obtained helps researchers to have a better understanding of how the conversation is organised, what topics are addressed and what is the activity of both partners.

Another method to be used in the evaluation is the MetAphAs protocol (Rosell-Clari & Hernández-Sacristán), which is a protocol for evaluation of metalinguistic abilities in patients with aphasia that includes 40 items distributed in six sections, namely: 1) Inner language, ability to inhibit and discourse. 2) Control of concurrent semiotic procedures. 3) Paraphrastic abilities and associated phenomena. 4) Referred sayings and related phenomena. 5) Monitoring capability. Contextual marks. 6) Displaced uses of language and Theory of Mind. This exploratory protocol is useful for developing intervention programs that improve the metalinguistic skills and communication of patients, for these reasons it was considered as an appropriate resource to evaluate the linguistic function in people with dementia. Furthermore, it helps to assess natural metalinguistic abilities in patients with dementia and, based on their application, to show metalinguistic differential profiles in the patients, which serve as a starting point for the planning of individualised intervention.

The central goal of language therapy is to enable effective communication based on face-to-face conversation and other forms of interaction, such as the use of augmentative systems, gestures and icons, among others. Strategies and activities should be tailored to the patient's performance, the progress of the disease, and the needs of their caregivers. As communication is the axis of this activity, in the early stages of the disease the interaction between language therapist and patient must meet one of the fundamental characteristics of human language, which is none other than "the ability to refer to things not present in the moment or place of speech"(Rosell-Clari & Hernández-Sacristán). Therefore, the language therapist should stimulate the use of the narrative of the patients biography, the conversation on topics of interest, the planning of their social events, analysis of current news and their plans. That is, face-to-face communication is the framework that will serve to achieve actual and enhanced communicative productivity.

Language therapy techniques aimed at stimulating face-to-face conversation can be planned in different ways. There are several programmes that enable the development of processes that support the conversation. One of them is the Programme of Stimulation of Metalinguistic Skills in Theory of Mind for People with Dementia the

rationale of this approach is to stimulate the metalinguistic performance of this population in the most natural contexts possible. It is based on the production of texts from the spontaneous and induced linguistic activity of functions such as listening-speaking or reading-writing, in ten ToM skills to which have already been referred to: describe an object or situation not present, remember past events, anticipate future events, describe scenes, ability to contradict or find antonyms, read emotions, use of fictional language, ability to lie and express sarcasm. The general objective is to provide the language therapist with a structured and organised guide aimed at optimizing the necessary skills so that the person with dementia in the initial and middle stage can sustain an adequate linguistic exchange with their habitual interlocutors [34-38].

Acknowledgements

References

1. López-Ornat S (2011) La adquisición del lenguaje, un resumen en 2011.

2. Keysar B, Lin S, Barr DJ (2003) Limits on theory of mind use in adults. Cognition 89: 25-41.

3. Valles-González B (2013) Aplicaciones de la lingüística clínica al análisis de la conversación de la persona con demencia y sus interlocutores sanos. Revista de Investigación en Logopedia Universidad de Castilla La Mancha 3: 96-119.

4. Byom LJ, Turkstra L (2012) Effects of social cognitive demand on Theory of Mind in conversations of adults with traumatic brain injury. Int J Lang Commun Disord 47: 310-321.

5. Mackay A (2000) Actividade Verbal. Sao Paulo, Brasil: Plexus Editoral.

6. MacKay AP, Guerra P, Sanhueza T, Martínez C (2016) Discurso oral en el envejecimiento: Estudio de caso. Forma y Función. 30: 59-73.

7. Van Dijk (1999) En Discurso, Cognición y Educación. Ensayos en honor a Luis Gómez Macker. Giovanni Parodi Editor. Chile: Ediciones Universitarias de Valparaíso. Universidad Católica de Valparaíso.

8. Halliday MAK (1975) Learning how to mean. Explorations in the Development of Language. London: Edward Arnold (Publishers).

9. Hernández-Sacristán C, Rosell-ClariV, Serra-Alegre E, Quiles-Climent J (2012). On natural metalinguistic abilities in aphasia (A preliminary study). J Aphasia 26: 2.

10. Serra M (2006) Veinticinco años reformulando el concepto de lenguaje en psicolingüística clínica y en logopedia. Revista de Logopedia, Foniatría y Audiología 26: 20-35.

11. Rosell-Clari V, Hernández Sacristán C (2014a) MetAphAs Protocolo de Exploración de Habilidades Metalingüísticas Naturales en la Afasia. Valencia: Nau Llibres.

12. Rosell-Clari V, Hernández Sacristán C (2014b) La evaluación del déficit lingüístico adquirido en el adulto. La afasia como ejemplo, en M. Fernández

13. Rosell-Clari y Bernicot (2012) Protocolo franco-español de exploración de habilidades metalingüísticas en niños de 6 a 9 años: un estudio preliminar. Boletín AELFA 12: 61-66.

14. Rosell-Clari V, Valles-González B (2016) Theory of Mind (ToM) and language: stimulating metalinguistic skills in people with dementia. Revista CoDAS 28: 3.

15. Arkin S, Mahendra N (2001) Insight in Alzheimer's patients: results of a longitudinal study using three assessment methods. Am J Alzheimer's Dis Other Demen 16: 211-224.

16. Shakespeare P Clare L (2005) Qualitative Research in Psychology. 2: 327-340.

17. Gombert JE (1992) Metalinguistic development. Hertfordshire, UK: Harvester Wheatsheaf.

18. Barkley R (2001) The Executive Functions and Self-Regulation: An Evolutionary Neuropsychological Perspective. Neuropsychology Rev11:1-29.

19. Karmiloff K, Karmiloff-Smith A (2001) Hacia el lenguaje. Madrid: Morata.

20. Ygual A, Roselló B, Miranda A (2010) Funciones ejecutivas, comprensión de historias y coherencia narrativa en niños con trastornos por déficit de atención con hiperactividad. Revista de Logopedia, Foniatría y Audiología 3: 151-161.

21. Henry LA, Messer DJ, Nash G (2012) Executive functioning in children with specific language impairment. J Child Psychol Psychiatry 53: 37-45.

22. Buczylowska D, Petermann F (2016) Age-Related differences and heterogeneity in executive functions: analysis of NAB executive functions module scores. Arch Clin Neuropsychol 31: 254-264.

23. Tirapu-Ustárroz J, Muñoz-Céspedes JM (2005) Memoria y funciones ejecutivas. Revista de Neurología 41: 475-484.

24. Kosmidis MH, Aretouli E, Bozikas VP, Giannakou M, Ioannidis P (2008) Studying social cognition in patients with schizophrenia and patients with frontotemporal dementia: theory of mind and the perception of sarcasm. Behav Neurol 19: 65-69.

25. Baron-Cohen S, Jolliffe T, Mortimore C, Robertson M (1997) Another advanced test of theory of mind: evidence from very high functioning adults with autism or asperger syndrome. J Child Psychol Psychiatry 38: 813-822.

26. Farrar M, Maag L (2002) Early language development and the emergence of a theory of mind. First Language, 22: 197-213.

27. Malle BF (2002) The relation between language and Theory of mind in development and evolution. In T. Givón y B.F. Malle (Edn) . The evolution of language out of pre-language. Amsterdam: Benjamins 265-284.

28. Hale CM, Tager-Flusberg H (2003) The influence of language on theory of mind: a training study. Dev Sci 6: 346-359.

29. Miller CA (2006) Developmental relationships between language and theory of mind. Am J Speech Lang Pathol 15: 142-154.

30. De Villiers J (2007) The Interface of Language and Theory of Mind. Lingua 117: 1858-1878.

31. De Villiers J, de Villiers P (2014) The role of Language in Theory of Mind Development. Top Language Disorders 34: 313-328.

32. Subirana J, Bruna O, Puyuelo M, Virgili C (2009) Lenguaje y funciones ejecutivas en la valoración inicial del deterioro cognitivo leve y la demencia tipo Alzheimer. Revista de Logopedia Foniatría y Audiología 29: 13-20.

33. Rosnay M, Hughes C (2006) Conversation and theory of mind: Do children talk their way to socio-cognitive understanding? British Journal of Developmental Psychology 24: 7-37.

34. Valles-González B (2014) El desarrollo fonetológico temprano de la lengua materna en una perspectiva discursiva. Revista Lingua Americana. La Universidad del Zulia. Año VIII Nº 15: 9-27.

35. Poletti M, Enrici I, Adenzato M (2012) Cognitive and affective Theory of mind in neurodegenerative diseases: Neuropsychological, neuroanatomical and neurochemical levels. Neuroscience and Biobehavioral Reviews 36: 2147–2164.

36. Valles-González B (2014) Programa de Estimulación de Habilidades Metalingüísticas en Teoría de la Mente (ToM) para personas con Demencia. Valencia: Beatriz Valles Editor.

37. Bayles KY, Tomoeda CH (2007): Cognitive-Comunication Disorders of Dementia. Estados Unidos: Plural Publishing, Inc.

38. Valles-González B (2011) Representaciones y creencias en torno a la evaluación lingüística del adulto mayor con trastorno cognitivo leve. Revista de Investigación en Logopedia, Vol.1,1: 12-34.