The Grammar of Social Relationships: from Language to Social Cognition

Elena Fontana
Center for Cognitive Science, Department of Psychology,
University of Turin
elena.fontana@unito.it

Mauro Adenzato
Center for Cognitive Science, Department of Psychology,
University of Turin
Neuroscience Institute of Turin
mauro.adenzato@unito.it

Abstract

In the present study, we analyze the relationship between social cognition and language and, specifically, between Theory of Mind (ToM) and syntax. We propose a reflection about the importance of understanding this relationship especially for future clinical applications. We propose to divide the state of the art on the topic into two major strands: the hypothesis of dependence and the hypothesis of independence between ToM and syntax.

1. Introduction

The purpose of this paper is to present an overview of the main hypotheses on the relationship between syntax and ToM. Syntax is the component of language that allows a human being to understand and construct an infinite number of grammatical sentences from a finite number of elements; specifically, it is the linguistic component that deals with the study of the principles and processes by which sentences are constructed and then how words are composed to form a sentence (Chomsky, 1957). ToM is the ability to attribute to ourselves and to others mental states such as desires, beliefs, intentions, thoughts and emotions in order to understand, predict, interpret and sometimes even influence our own and others' behaviors on the basis of such mental states (Baron-Cohen, 1995).

In order to better understand the relationship between syntax and ToM, we analyzed studies on pre-school children with typical development, deaf children with deaf signer parents or hearing parents, children with delayed language (e.g., children with specific language impairment), children diagnosed with autism spectrum disorder, children speaking languages other

than English, training studies, and studies on adults with neuropsychological dis-orders (e.g., aphasia).

2. The hypothesis of Theory of Mind development dependence upon syntax

When we talk about dependence, we refer to three different ways to picture causation: some researchers have speculated that ToM contributes actively to the development of language; however, most of the studies identify a relationship in the opposite causation, that is to say that ToM owes its development to the presence of a good linguistic basis (e.g., De Villiers & De Villiers, 2000; Pyers & Senghas, 2009; San Juan & Astington, 2012). A third possibility, a bit less investigated, is that the two skills are related to each other be-cause both are related to a third missing variable (Hauser, Chomsky & Fitch, 2002; Vicari & Adenzato, 2014).

By analyzing assumptions of the dependence of ToM on language, we can observe that most of the studies focus on the dependence of ToM upon syntax, which means that we need a previously acquired syntax for the proper development of ToM (e.g., De Villiers & De Villiers, 2000; Hollebrandse et al., 2008; Kiss & Jakab, 2014).

Meaningful studies that assume the dependence of ToM upon syntax are longitudinal studies (e.g., Astington & Jenkins, 1999; De Villiers & De Villiers, 2000; De Villiers & Pyers, 2002) and training studies (e.g., Hale & Tager-Flusberg, 2003; Lohmann & Tomasello, 2003). For example, in a longitudinal study De Villiers and Pyers (2002) noted that the mastery of the syntax for sentential complements was the best predictor of success in ToM tasks, and in a training study Hale and Tager-Flusberg (2003) found that the acquisition of sentential complements as specific linguistic construction leads to improved performance on false belief tasks.

3. The hypothesis of Theory of Mind development independence of syntax

The hypotheses of independence explain how language and ToM are related but separated skills, neither of which are necessary nor sufficient for each other (e.g., Siegal et al., 2001; Miller, 2004; Siegal & Varley, 2006; Willems & Varley, 2010; Lewis et al., 2014).

According to this hypothesis, grammar has a function of slight importance for ToM development even if it is an important source and means for the mediation of the conversation. For example, the evidence on aphasic patients indicates that explicit grammar ability is not necessary to scaffold ToM reasoning (e.g., Ramachandra & Schneider, 2011; Ramachandra & Mikajlo, 2013), an hypothesis which is also supported by the studies about ToM reasoning in adult patients with damage to the right hemisphere in which the results show that the impairment is associated with deficit in ToM skills and pragmatic awareness, in the presence of intact grammatical skills (Siegal & Varley, 2006).

4. Discussion

The role of language in ToM is well-recognized but the relative contribution of different aspect of language remains debated (e.g. see Ruffman et al., 2003; Astington & Baird, 2005). In the present analysis we

have focused the attention on syntax, and the emerging picture is rather controversial. In our opinion, in order to understand why studies that investigated the relationship between syntax and ToM yielded mixed results it is important to pay attention to the kind of experimental tasks normally used in these studies. In particular, it is worth underlining that ToM tasks used in most of the studies we reviewed are not cognitively equivalent and they might draw on various mental abilities. Furthermore, even the samples studied by different authors involved in this debate are not fully comparable. One thing is to discuss the relationship between ToM and syntax in the development stages; another is when both functions have already been acquired. In the near future would be beneficial a contribution from a cognitive neurodevelopmental approach to the matter covering the whole life span with the use of converging methodologies, that is, an approach able to integrate what we have under-stood so far into a wider and integrated framework and able to go beyond the current limits mainly due to the use of populations and methods often not comparable.

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