

How emotional is language acquisition?

On the importance of emotion in the acquisition of the first language

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ABSTRACT

Drawing from research on children's sensitivity to emotion and on the links between language and emotion, the present research targets the question of what role emotion plays in first language acquisition. More precisely, it asks whether emotion might be a tool that is exploited during the acquisition of the linguistic system and in what ways it might be used. It is proposed that the emotion system constantly interacts with the language system since the early stages of infancy, and that the two systems influence each other while developing. Furthermore, after studies that assess how strikingly better human babies are in interacting and cooperating with their fellow humans than other primates (Warneken et al., 2006), the present review connects the first forms of interaction between caregivers and infants (and, later on, the other way round) with the model proposed by Tomasello (2008) for human cooperative reasoning. Precisely, if emotion expression and emotion recognition are among the fundamental bricks that ensure human communication, they must be present and play a role since very early on as first cues to attend and understand human interaction, and in such a fashion they accompany - and contribute to - the whole process of language acquisition.

1. Introduction

There is one prominent aspect that draws a very clear line between humans and other animals and living species: the quality of their communication. Many species have developed some form of communication between members of the same species or group, but only human beings are capable of strikingly precise and creative forms of communication. They exploit the finely-tuned means of language to convey very specific messages, or express extremely punctual states, notions or ideas. Language is a technical tool, an extremely versatile collection of sign-to-meaning mappings, but humans also employ other means to better shape their communication or add hues to it. Emotion is the primary of these means, and it is mostly expressed through bodily devices such as voice (tone, sentence intonation), posture, gestures and facial expressions.

Humans are such experts in using these bodily devices that the same facial expression, for instance, is used to convey different emotions. The consequence is that on the recipient's side much attention must be paid to the facial expression itself, and all the other emotional and linguistic cues must be carefully considered

too in decoding and categorising what emotion the speaker is conveying.¹ As a study by Ekman and colleagues suggests (1988), people are good at masking opposite emotions under the seemingly same smile. Ekman and colleagues analyzed videotapes of subjects describing positive feelings truthfully (when they did experience them) and falsely (when they did not experience the feelings, but faked them), and found that the ‘true’ trials could be distinguished from the ‘fake’ ones by closely analysing the type of smile and the facial muscles involved in it.

Such data show how, during interactions, the ability to read emotions in others and use them to complete the message provided by the linguistic means is crucial to human communication. A model that captures the various aspects of human interaction, which terms them *norms of cooperation and cooperative reasoning*, is the one proposed by Tomasello (2008), reproduced below in Figure 1.

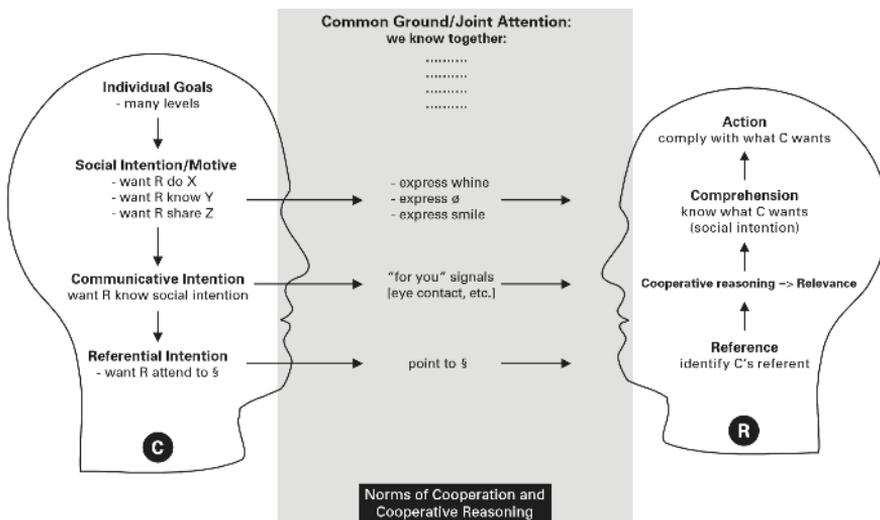


Figure 1. Norms of Cooperation and Cooperative Reasoning (Tomasello, 2008, p. 98).

In Tomasello’s model emotion is part of the common ground, and it is the means through which the communicator expresses their social intention. As it is easily noticed, the expression of a social intention and its decoding are central in the model, indicating that they are fundamental in human communication. Therefore they must have some sort of salience even at a very early stage in human development, such as infancy and childhood. Indeed, if the model faithfully accounts for the building blocks of human interaction, it does not only apply to adult interaction, but also to the ‘primitive’ forms of communication that exist between caregivers and infants. After all, it is clear that infants cooperate with caregivers and fellow humans, as soon as it is cognitively possible to them, by attending to communicative situations (and starting to decode their content).

1 Of course, emotion can also be conveyed through language alone: consider for example novels, or any written language form. For the purpose of the present paper, however, I will only refer to spoken interaction and communication.

With these premises the present paper aims to address the research question of *what role emotion plays in the acquisition of the first language*. In other words, the focus of the present research is on the degree to which human infants are sensitive to emotion, whether (and how) they decode different emotions in their caregivers' speech and how they use such cues in the process of acquiring language. The relevance of such a question is precisely in addressing one of the resources used in the process of language acquisition, and thereby in casting further light on this complex phenomenon.

Section 2 of the paper addresses the research question: Section 2.1 provides some preliminary data on the interaction between the linguistic and the emotional system, Section 2.2 focusses on children's sensitivity to emotion, and Section 2.3 dives into how individual temperament plays a role in acquisition and how human babies are especially good at cooperation. Finally, Section 3 draws the conclusion that, since emotion is tightly intertwined with language since very early on, it accompanies the acquisition process and contributes to it. The preliminary account offered is that emotions are used as cues for attending linguistic interactions and understanding them in absence of a fully developed language system.

2. Emotion in first language acquisition

What are the links between the emotion and the language system? To what extent are children sensitive to emotion in caregivers' speech? How important are factors such as individual temperament in the acquisition process? The present section addresses these questions and others, with the common denominator of how emotion interacts with language during acquisition.

2.1 Language and emotion as systems: links and influences

Language reflects emotion, that is, language provides precise means to express emotion. Therefore the common assumption is that experienced emotion affects language and the latter 'merely' shows it. But the influence can go the other way round too, so that language influences the concept we have of emotion. More precisely, language functions as a "context for the perception of emotion", as Feldman Barrett and colleagues argue (2007, p. 327), and it shapes the way we perceive emotion in others. Feldman Barrett and colleagues review a number of studies that point to the fact that language, and especially emotion words, can cause a "perceptual shift in the way that faces are seen" (p. 329). For instance, words describing anger connected to a scared facial expression might influence our judgement and make us think that what we are seeing in the face is indeed anger. In sum, the linguistic system can definitely influence the emotion system.

When considering the early stages of development of children, the question of the influence (mutually) exerted by the two systems is even more crucial. Given that the two systems are developing, together with the rest of the brain and the body, understanding if there is already an influence would cast light on how the individual developmental processes work and how 'powerful' the systems already

are. Bloom and Beckwith (1969) conducted a longitudinal study with 12 children, assessing them from 8-9 to 30 months of age, and they concluded that the two systems clearly proceed in parallel and seem to compete for cognitive resources. When children started acquiring and expressing emotion words, Bloom and Beckwith observed that they expressed an emotional state shortly after having uttered the corresponding emotion word. That leads them to hypothesise that the language system and the emotion system take up a great amount of cognitive resources, and therefore children cannot express emotion and language at the same time, as they don't have enough cognitive power yet. This is evidence of how the two systems' development proceeds in parallel, for there is no stronger, earlier developed system that requires less cognitive effort in working.

A final, remarkable piece of evidence of the existing link between language and emotion is in Infant Directed Speech (IDS). Trainor and colleagues (2000) elicited both Adult Directed Speech (ADS) and IDS, asking their participants to imagine being in emotional situations, and they found that, contrary to common assumptions, ADS and IDS do not differ much in terms of prosody when expressing the same degree of emotional content. What constitutes the main difference between the two registers is that in 'normal', non-experimental circumstances ADS does not express much emotional content, whereas IDS is characterised by the constant expression of emotion, due to the fact that prosody (hence emotion) is the only channel for the message to be conveyed to a baby. Therefore, as IDS is arguably the only (or at least the very first) type of speech that babies hear, it is clear that their first linguistic experiences are rooted in emotion-rich speech. In other words, language is immediately, and constantly, intertwined with emotion in the input that babies receive, which makes it likely for humans to conceive language and emotion as tightly connected.

2.2 Children's sensitivity to displayed emotion

Given the pervasiveness of emotion in the language that babies are exposed to, it is not surprising that children mostly rely on emotion for their early communication. For instance, as shown by Sorce and colleagues (1985), children facing a fake cliff together with their mother first inspect the emotion displayed by the mother, and then opt for crossing the fake cliff or not. Indeed, in the trials when the mother was instructed to display fear, the number of children crossing the cliff was significantly lower compared to when the mother was instructed to display joy or interest.

Children usually count on adults' emotional state towards a novel object or situation before developing a response to it. This is because their emotional system is still developing and they don't have a proper value system either, so it seems that their very appraisal of the stimulus has to be mediated by the reaction of the more experienced adults around. This indicates that children need to be sensitive to emotion in adults, since it is their only communicative channel until they become somewhat proficient in using language.

Indeed, the acquisition process itself seems to take emotion into great account, as both adults and children are more prone to learn new words when they are accompanied by a happy face. Clément et al. (2013) tested both adults and 3 year-old children by having avatars propose two conflicting labels for a novel object, and found that subjects were more likely to choose the label offered by the avatar displaying a happy face as opposed to an angry or neutral one. This shows how crucial emotion-reading mechanisms are for learning vocabulary, and the fact that the effect was found for children as well as for adults indicates that the said mechanisms are definitely in place since a very young age, which is consistent with the above considered data on IDS and the pervasiveness of emotion in it.

2.3 Temperament and cooperativity

It is by now clear that children are exposed to a language tightly intertwined with emotion, and that they are quite sensitive to emotion displayed by caregivers. But how about children's own emotion displays?

Dixon and Smith (2000) collected data from questionnaires completed by mothers of children from the age range of 7 to 21 months and for the ages of 13 and 20 months, with a focus on temperament and communicative abilities. They noticed that overall positive affectivity, defined in terms of a tendency to display positive emotionality, was positively associated with language development in both production and comprehension. Their results seemingly conflict with those suggested by Bloom and Beckwith (1969), according to whom children who spent more time in a neutral affect expression acquired more proficiency in language, and did so earlier than children who expressed emotion more often. Dixon and Smith then propose a distinction in the timing of emotion display: when it happens at the same time of language processing, and its occurrence as a general personality trait. They argue that it might indeed be the case that, as suggested by Bloom and Beckwith, the emotion system takes up as many cognitive resources as the language system does, and therefore they conflict when employed at the same time. However, an overall positive temperament might enhance the chances for the child to engage - and be engaged - in interactions with adults, and hence increase the amount of exposure to language.

Finally, evidence from behavioural tests on cooperativity conducted by Warneken and colleagues (2006) shows that human babies are much better at cooperating with fellow humans than chimpanzees. Children as young as 18-24 months are already successful in taking interest and participating in "problem-solving activities and social games" (p. 640). In addition, as an experimental manipulation, Warneken and colleagues instructed the adults involved in the activities to stop collaborating at a certain point during the trial. No chimpanzee even tried to regain the human's attention, whereas children employed a series of communicative tools to make at least one attempt at it. This marks humans as great communicators, and very sensitive ones too, in that they care for their partner's attention and keep engaging it in order to solve a cooperation puzzle.

The data on humans' unique cooperative ability pair up with the proposal by Tomasello (1988, and, more extensively, 2000) that interaction, cooperation and "joint attentional processes" (p. 83) are the key to language acquisition. That is, children need interactions that require cooperation between them and adults, which in turn requires the participants to direct joint attention towards the focus of the interaction or puzzle at hand, in order to start acquiring words and building up grammar.

3. Conclusion

Summing up the reviewed evidence, it seems clear that emotion is very closely related to language since early infancy and during child development: IDS, with its characteristic of always expressing emotion, is the first linguistic form children come in contact with, and the development of the emotional and the linguistic systems proceeds in parallel. Evidence that the emotion system does not precede the language system in development comes from the fact that young children always check the adults' emotional reaction to novel objects or situations before developing a response of their own to them. Therefore early human communication, pre-verbal as well as verbal, can be definitely said to always involve emotion (on the caregivers' side) and emotion-reading abilities (on the children's side).

What is even more striking in terms of language acquisition is that emotion plays a crucial role in vocabulary acquisition, as children, like adults, evaluate the facial expression and the emotion displayed by the speaker and trust speakers displaying positive emotions more. Of course vocabulary acquisition is not a bare and isolated process where an adult proposes words and the child acquires them, but, on the contrary, takes place during human interaction. Indeed, adopting the proposal by Tomasello (1988, 2000), the outlines of the acquisition picture involve cooperative interaction and joint attention between child and adult. The child's own temperament, in the form of overall positive affectivity, makes for higher chances of such interactions to happen, which are, as explained above, the very ground for communication, and hence learning, to take place.

To sum up what we considered so far, emotion seems to be an actual tool for acquisition, and a very useful one too. Not only is it the only communicative means during the pre-verbal stage of development, when abstract components such as word meanings and functions are not yet acquired, but it helps children attend human interactions and build joint attention, as well as engage in interactions in the first place. Therefore it seems very likely that, in this sense, emotion might function as a first guideline for children to attend language and hence, in time, to start building the abstract form-to-meaning mappings of language. This, of course, on the side of serving as the first 'meaning' that children can extract from linguistic communications (especially in early infancy).

A final note on suggestions for further research seems due, considering that the analysed phenomenon is a rather complex one, and that a clear and definitive

account hasn't been agreed upon yet. It would certainly be interesting to investigate how emotion keeps influencing acquisition in terms of affecting children's response to the novel and the corrective input that they receive throughout the process. It might be important to look at how the emotion conveyed in the input itself changes or shifts in intensity over time, since IDS stops being the default communication mode when children reach a certain age, and the IDS directed to a 3-4 year old child is certainly different from that directed to a newborn baby or infant. In conclusion, if we asked so far what role emotion plays in language acquisition, and we replied with considering that it has a fundamental importance in the process, the new question to address might then be: how long does emotion play such a crucial role? ■

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