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Using Digital Language Analysis to Recognize Emotional Overtone in Caregivers' Commands to the Child

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Abstract: This article reports the findings of a digital language analysis of the recording of conversations between caregivers and children under five years of age. The sociolinguistic aspect of language transfer reveals how the language of requests shapes the normative image - what is allowed or not - and that this is supported by the emotional background of requests, which shapes the normative image of the child's world via language. In this study, the author uses the TalkBank recordings repository and the digital tool for the analysis of emotional overtones available from the CLARIN-PL Scientific Infrastructure.

Keywords: digital language, emotional overtones, digital tools, family patterns

Introduction

Natural language processing with digital tools in the humanities and social sciences is currently an innovative research path (Németh, Koltai, 2021). Pointing out the interdisciplinary importance of conversation in human life and how conversational input shapes the theory of mind development in infancy and early childhood. (Slaughter, Peterson 2011). This article combines this interdisciplinary viewpoint by pointing out the importance of words and, with them, the emotional resonance that



caregivers direct toward children. The hypothesis of this article is similar to the deterministic hypothesis of Edward Sapir and Benjamin Lee Whorf (Lucy, J.A. 2001). The claim is that human thinking is determined by language. The acquisition of communication patterns by a child as he or she grows up with their caregivers forms their communication. Furthermore, the serve-and-return interaction between the child and the caregiver is a kind of play on the pattern of response and emotion carried by the language of subordination. Just as thought is determined by language, so the present is derived from the development of new technology. In this paper, I show the determinism of caregivers' language on children and the determinism of digital technology of analysis in science.

New technology tools such as Sentiment Analyser and Hate Speech demonstrate the use of machine learning models to detect emotions. Recognition of basic emotions by artificial intelligence is at a high level (Kunc, Komoszyska, Perz, Kazienko, Saganowski, 2022). Recognition of emotion by words based on the dictionary of language (Kshirsagar, Falk 2022) therefore, the results of this study show the conclusions of the analysis of serve and return command words in Polish. There is a common bridge in this determinism of technology development and language transmission from caregivers to children. So, as the tools of technology are determined by the resources from which they draw their knowledge of the language, the child is determined by the caregivers with what language and emotion they present the world to the child.

In this paper, I present the use of digital language analysis tools in children's dialogues with caregivers. I combine the use of digital methods to analyze child-directed words. At the same time, I use the TalkBank repository of recordings and, more specifically, recordings that enable such language analysis in the social context of the emotions that are hidden in words addressed from carers to children.

With the stages of development of a child, communication changes. However, it is the first years of a child's life in the family that determine the acceptance of conversation as a form of contact or its avoidance in the family. The acceptance of the child's participation in family conversations or the separation of the child's world from the adult world. The specific discourse of the family world sets the child's path to communication with the world. This environmental relationship of family patterns marks the acceptance of conversation as a form of experiencing the world (Behm-Morawitz, 2022). A participatory metaphor in which learning is conceptualized as a community of practice and changing roles and identities, which also takes place in everyday conversation (Sfard, 1998:6). Social practice begins in everyday family conversations (Gee:1998) where discourse about the world frames norms, social roles, and identities (Montessori, 2011). Parent-child communication is the verbal and non-verbal interaction between a parent and child within a family system (Munz, 2015).

The research cited confirms that communication in the family is a primary pattern and resource. The purpose of this article is to decide what bad or good patterns we inherit from communication in the family. The purpose of this article is to establish patterns of how to communicate with people or how not to do so. Communication patterns can be helpful and limiting at the same time. The purpose of this article is to show how, in everyday family narratives, we are shaped to respond to the interlocutor and the environment starting with commands, judgments, and warnings.



Research Aim and Research Questions

The analysis of conversational dialogues between children and caregivers allows the analysis of the emotions contained in the messages. The analysis of spoken language using new technologies such as the Hate Speech tool has made it possible to show the emotional value of messages that are part of a child's socialization. The questions in this article are exploratory: how well a digital natural language processing tool will cope with the analysis of emotions in dialogues between parents and children. Confirmation of Shapiro-Whorf's hypothesis that language de-motivates the child's behaviour, socialisation, because through language we contain emotions. The use of acknowledgments, or only commands, creates a communication climate that bridges the transgenerational transmission between children and caregivers, as confirmed by the analysis of emotions in language carried out with the Talk Bank and the HateSpeech tool.

Using the resources of the open recordings repository TalkBank and the natural language processing tool HateSpeech based on the language processing method (Macwhinney et al 2004.) Two tools for digital language processing were used: HateSpeech (Piasecki, Młynarczyk, Kocoń: 2017) and the Sentiment Analyzer. Polish words were analyzed. Therefore, a digital language processing tool familiar with Polish dictionary resources was selected. For multilingual analysis, another tool called Multiemo (Kocoń et. al 2021).

Research Results

Language, being a mirror of both the real world and the world of culturally conditioned concepts, reflects not an objective, but a subjective picture of the world. Positive or negative emotions in the language of everyday conversation can not only draw a picture of the world as threatening or optimistic (Ekman, 1992). The whole picture of the world is contained in the positive and negative emotions present in the language of everyday conversations with the child.

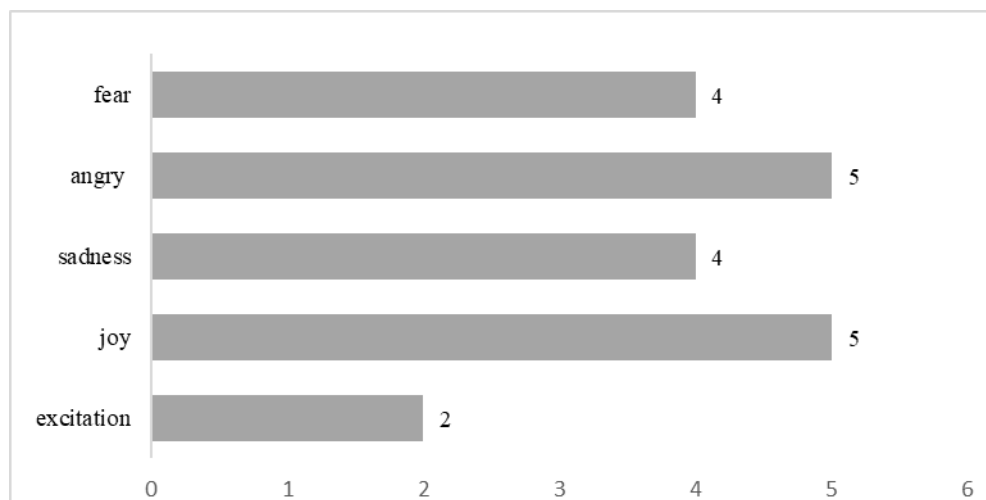
The stages of analysis that the author of the text carried out consisted of collecting words from recordings of conversations in families, dividing the words into corpora, and performing an analysis of the emotional overtones of these words. Of the eighty units of naturalistic conversation phrases from the total 'utterances' in verbal version of the serve and return, the most numerous were as follows: 23 words commands): fetch me, throw to me, draw, walk, chin up, listen, look, wait, do, get up, put your foot in, wait, you have it here, throw out, tell me, comb your own hair, show car, draw, cover it, look what I am doing, show where the lamp is, come listen, put down.

The conclusions of the analysis can be seen in the graph below.



Table 1

Words commands and emotion. Visualization after using the emotional overtones tool analyzer.



Access to the tool was provided by the CLARIN-PL Scientific Infrastructure <https://ws.clarin-pl.eu/sentymen.html>

Source: Author's own development.

Of all commands, the negative emotions identified in the commands were anger, fear, sadness, disgust, and surprise at something unpredictable. Positive emotions identified in these 7 words from the 23 words to which emotions are attributed, such as joy and excitement. The vast majority of words (a total of 13 words from the command group) were identified as words with overtones of emotions such as fear, anger and sadness. However, the list of core emotions is not equal in the number of positive and negative emotions, there are more negative emotions: sadness, fear, anger in opposition to joy and excitement. However, the commands given to children up to the age of five carry in the words used by carers the fear for children (which can be followed by fear and sadness on the part of the carer) formulated in the commands: leave, put down. However, shaping the perspective of risk in everyday life through the words and expression the carer expresses in the phrases put down, leave, wait. These words are supposed to alert the child to danger. At the same time, they can direct the child towards an attitude of 'submission' towards the caregiver in the hope of developing a stage of rebellion against mental health.

The same 23 request types of serve and return were analyzed by the Hate Speech digital language analysis tool. Commands in command mode were identified as offensive by 67%. Only 33% of all 23 type requests were identified by the tool as nonoffensive. From all 23 give-and-go requests, this give-and-go request as an interaction between child and caregiver shows that the command mode in language carries emotions of a more negative nature.

Conclusions

In summary, the language of caregivers directed to children under 5 years is definitely the language of commands and prohibitions followed by emotions such as fear, sadness, anger, and joy, the latter



perhaps from the caregiver's reaction to the child's successes understood as compliance (responded to a command). The digital language analysis that was performed shows the background of emotions hidden in the language of commands in the child-caregiver relationship. It is significant that the attribution of meaning to words takes place in a cultural context, but the parent's commands to the child capture the language processing tools used to analyze overtones and the TalkBank recordings resource also shows an open resource in learning. This is a valuable resource, especially for the analysis of spontaneous conversations. The analysis requests words serve and return between caregiver and child under 5 years of age confirming that the command mode in these words is recognition as an offensive language and about negative emotional character. Sapir and Worf's hypothesis indicating that humans are determined by language in this research shows that the recognition of emotions in words is a determinism embedded in language and also in the vocabularies of artificial intelligence.

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