Communicative Function in the Utterances of Two Signing Chimpanzees

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Introduction

The communicative function of an utterance can be defined as the instrumental means by which an individual aims to achieve a communicative goal[1]. An utterance is considered the fundamental unit of linguistic communication and the production of an utterance serves to facilitate the achievement of the underlying goal. This goal may be to change the belief of an interlocuter, maintain or initiate a conversation, express an internal state or otherwise facilitate an exchange of information between one's self and the external social environment[1,2]. Analyses of communicative function offer insight into an individual's cognition, development of language, pragmatics and conversational competency[2].

Tatu and Loulis are two adult chimpanzees who learned American Sign Language (ASL) as infants and have continued to use signs as a way to communicate with human caregivers and other chimpanzees over time and throughout environments[3]. Chimpanzees reared among ASL-using humans and chimpanzees have been shown to follow similar patterns of language development and communicative functions as deaf and hearing human children[2,4-6]. In August 2013, Tatu and Loulis moved from The Chimpanzee and Human Communication Institute (CHCI) located on the campus of Central Washington University to Fauna Foundation (FF), a sanctuary near Montreal, Canada, where they were introduced to a new social group of chimpanzees. Human caregivers from CHCI remained with Tatu and Loulis and continued to record daily sign logs, which include descriptions of signed and non-signed behaviours, as they had done at CHCI. These records provide an archival database which can be used to study sign usage, including communicative function in the utterances of signing chimpanzees.

Objective

Our study aimed to analyze the distribution of communicative function categories from sign logs recorded at FF, dating between August 2013 and February 2014, and compare these results with previous work by Leeds & Jensvold[2] which categorized communicative functions in the utterances of five signing chimpanzees (Tatu, Loulis, Washoe, Moja, and Dar) between the years of 2000-2003 at CHCI.

Hypothesis and Predictions

Signing chimpanzees modulate their sign use and frequency based on variables related to social contexts and conversational partners[7,8] but sign usage itself continues as a robust behaviour over time and through environments[3]. The recording of sign logs occurred similarly at both CHCI and FF, and those responsible for writing logs in both locations were caretakers with similar training, linguistic competencies, and friendly relationships with the chimpanzee residents. We therefore predict that as the nature of the conversational contexts and partners remained relatively consistent between CHCI and FF, the communicative functions of Tatu and Loulis' utterances will follow similar patterns of categorical distribution as those reported by Leeds & Jensvold[2].

Acknowledgements

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Methodology

Two separate observers categorized sign logs recorded between August 2013 and February 2014. A total of 103 utterances were categorized into one or more of the seven categories of communicative function, using the same operational features to categorize each utterance as previous studies on communicative functions in chimpanzees and human children[2,9,10]. The categories are Request, Response, Description, Statement, Conservational Device, Performative and Uninterpretable. We compare the results from our analysis with those reported by Leeds & and Jensvold[2] with a chi-square goodness of fit test using VassarStats software (vassarstats.net). In addition, we compare the distribution of Tatu and Loulis's communicative function categories in interactions with different conversational partners (i.e. human caregivers C-H or other chimpanzees C-C).

Results

Figure 1. Categories of Communicative Function Chimpanzee-Human

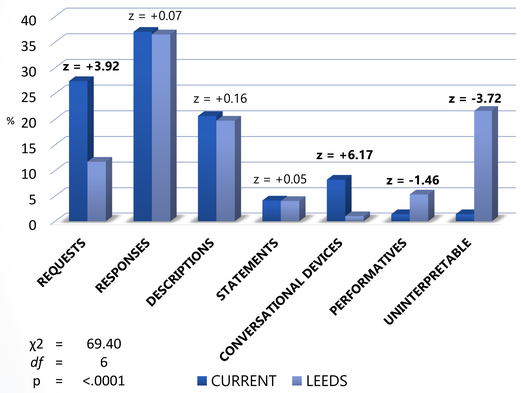

Figure 2. Categories of Communicative Function Chimpanzee-Chimpanzee

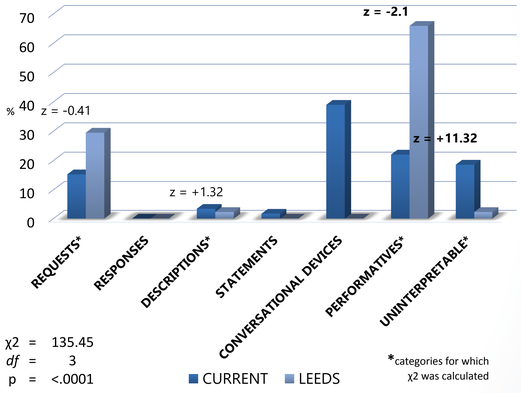

Figure 3. Categories of Communicative Function C-H vs C-H

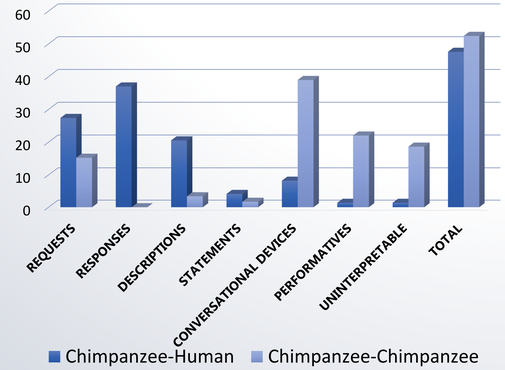

Figure 1. Comparison of percentages of Communicative Function categories reported in the Chimpanzee-Human interaction subgroup from our current study and Leeds & Jensvold[2].
Figure 2. Comparison of percentages of Communicative Function categories reported in the Chimpanzee-Chimpanzee interaction subgroup from our current study and Leeds & Jensvold[2].
Figure 3. Comparison of percentages of Communicative Function categories between the Chimpanzee-Human and Chimpanzee-Chimpanzee interaction subgroups from our current study.

Definitions of Communicative Functions[1,2]

Requests: solicit information, actions or acknowledgement.
Responses: directly complement preceding utterances.
Descriptions: represent observable or verifiable aspects of context.
Statements: express analytic and institutional facts, beliefs, attitudes, emotions, reasons, etc.
Conversational Devices: regulate contact and conversations.
Performatives: accomplish acts by being said.
Uninterpretable: unintelligible, incomplete or otherwise incomprehensible utterances.

Discussion

Our results indicate that the distribution of categories of communicative functions in the sign logs analyzed for our current study differ from the results in Leeds & Jensvold[2]. However, within the Chimpanzee-Human interaction (C-H) subgroup, we find that Response was the most frequent category in both the current study and Leeds & Jensvold[2] (37.0% 36.9% resp.). We also show that within C-H interactions Descriptions occur in similar proportions across both studies. Within the Chimpanzee-Chimpanzee (C-C) subgroup, we report Conversational Devices as being the most frequent (39%), while Leeds & Jensvold[2] report Performatives as the most frequent (66%). This difference may be attributed to an increased use of communicative functions produced to initiate conversation (i.e. Conversational Devices), as Tatu and Loulis had recently integrated into a new social grouping.

In our analysis of the distribution of categories between the C-H and C-C subgroups we found that Requests, Responses, and Descriptions occurred more frequently in C-H interactions, while Conversational Devices, Performative and Uninterpretable utterances occurred in higher proportions in C-C interactions. These findings may be reflective of differences in the nature of the relationships Tatu and Loulis have with either human caregivers or the other chimpanzee residents at FF.

Tatu and Loulis continue to use signs as a modality of communication throughout their day-to-day lives, and produce all seven categories of communicative function. Our results offer some insight into the social interactions experienced by Tatu and Loulis, and ways in which these two individuals use signs to exchange information with others across varying contexts.

Tatu

Loulis

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