



Chimpanzees' Use of American Sign Language in Cooperative Interactions

Candice Mendez, Katelyn Seymour, & Mary Lee Jensvold, Ph.D.

Primate Behavior Program, Central Washington University, Ellensburg, WA, Friends of Washoe, Ellensburg, WA



BACKGROUND

- This thematic analysis explores shift reports written by caregivers of Washoe, Tatu, Dar, Loulis, and Moja at Central Washington University.
- Chimpanzees and caregivers communicated regularly through American Sign Language (ASL), and caregivers documented their work shifts in written reports detailing interactions, observations, and daily events.
- These reports provide narrative data that capture the daily occurrences within the Chimp Lab.
- This analysis focuses on excerpts from these reports, highlighting moments of cooperation and signed communication.
- By examining instances of helping, sharing, negotiation, and conflict resolution, the study reveals the cultural norms of mutual respect and cooperation that shaped the daily lives of the chimpanzees and their human caregivers.
- The five chimpanzees who had acquired signs of American Sign Language lived on the campus of Central Washington University from 1980 to 2013.
- Washoe, Moja, Tatu, and Dar were immersed in ASL in a cross-fostering laboratory modeled after Western human households, which allowed them to acquire signs in a relaxed conversational environment⁶.
- Loulis acquired signs from other signing chimpanzees⁵. Caregivers signed conversationally with the chimpanzees throughout their lives^{10,2,3,9,11}.

MATERIALS

- Shift reports were written by Central Washington University (CWU) students and staff who worked 6+ hours/week, completed at least one ASL class, demonstrated proficiency in chimpanzee sign interpretation, and mastery of a behavioral ethogram. Their experience ranged from 1 day to 20 years.
- Handwritten shift reports were transcribed into digital text (all humans coded for anonymity) and uploaded into a thematic analysis software³.
- Coders used inductive coding to create codes as data was transcribed. Each code was accompanied by an operational definition.
- Themes were analyzed from excerpts containing the codes regarding signed conversations and cooperation.

Code	Definition	Excerpts Coded
Conversation	Multi-adjacent-turn Human-Chimp, Chimp-Human signed exchange. Includes at least 2 Chimp turns or conversation; "talk"; "chat w/ ..."	23
Sign.cc	Chimp signs to Chimp	25
Sign.ch	Chimp signs to Human	216
Sign.uk	Chimp signs to Unknown recipient	10
Reconcile.cc	Chimp-to-chimp reconciliation, or mention of reconcile	1
Sorry.c	Chimp apologizes, signs SORRY/	13
Sorry.hc	Human apologizes/signs SORRY to Chimp	12
Bargain.wait	Human bargains/negotiates with Chimp; Human asks or reports Chimp wait(s)	36
Help.ch	Chimp helps/cooperates with Human	44
Request.c	Chimp requests/asks, includes GIMME/	144
Refuse.hc	Human denies/refuses Chimp request	32
Refuse.ch	Chimp refusal/uncooperative	9

- There are more total "excerpts coded" because many of them have multiple of these codes, so they are counted multiple times. The "339" excerpts excludes duplicates.
- 339 excerpts contain at least one of the above codes

RESULTS

Apologies and Conflict Resolution: Chimpanzees often signed SORRY after aggressive displays toward caregivers, promoting reconciliation.

As I was collecting blankets, Dar was banging a bit – so I signed "DAR SIGN". He stopped and signed "SORRY" and that was that! I had no problems after that.

Friendship and Mutual Respect: Chimpanzees used the sign FRIEND to refer to both humans and each other, reinforcing social bonds.

She immediately signed "FRIEND". I asked [in sign] "who was her friend". She looked at the ground for a bit. I just waited. She signed "YOU". I told her she should be good. She signed "GOOD" pause "FRIEND" and stuck her lip out. I hesitated – "GOOD" she said. So I put my wrist up for her to visit it.

Showing affection toward humans: Washoe signed "Hug" to invite closeness and express affection. They reflect emotions; connection and desire for social engagement.

Expressing Discontent: Chimpanzees signed DIRTY to refer to unclean things or feces as well as express discontent such as denied requests or being ignored.

I went over behavior taxonomy with HO2 Washoe signed to us from the playroom. She signed "DIRTY" I supposed because we were talking and not paying attention to her. Then she signed HUG and put her back against the bars. I signed "SORRY TIME YOU PLAY". She then asked for Rat food HO2 went in and signed with her and told her it was time to play. Washoe signed "DIRTY" some more and then did something else.

Turn-taking and Patience: Individuals signed GOOD and waited for food or playtime, showing self-regulation and social awareness.

Washoe came in and asked for a nut. I was with HO2 so I said [in sign] "if you're good and go in the other room and wait, I'll get one in a minute" She signed "GOOD" and left for a bit. She came back in and signed "NUT" I said Remember, be good first, then later nut. She leaned over to Dar, kissed him on the cheek and signed GOOD. I was surprised, did you kiss Dar? She leaned over again, kissed his arm this time and signed "GOOD" I said yes, she was good, but she still had to wait.

Helping and Sharing: Chimpanzees voluntarily assisted with cleaning tasks, shared food and objects with humans and peers, and participated cooperatively.

Saw a nice feeding interaction between them in the tunnel. TA had a bowl Loulis signed "GIMME" a few times. Tatu wouldn't share until Loulis with low closed grin whimpered. Then Tatu handed Loulis the bowl

DISCUSSION

The patterns demonstrate a culture of cooperation, mutual respect, and social negotiation through signed conversations.

Apologies and Conflict Resolution: Chimpanzees signed SORRY after conflicts or disruptions which facilitated reconciliation.

- Chimpanzees use behaviors like those in human apologies to ease conflict.
- According to Jensvold⁷, caregiver gestures such as crouching helped reduce chimpanzee aggression and injuries⁸, showing their capacity for social repair.

Friendship and Mutual Respect: Chimpanzees frequently signed FRIEND toward caregivers and each other, demonstrating their social bonds.

- Chimpanzees show friendship by signing "friend" and building strong social bonds.
- According to Bloomsmith et al¹, time spent with caregivers led to more social behavior with both humans and other chimpanzees⁷.

Signs like DIRTY were used to communicate dissatisfaction with unmet wants, demonstrating both emotional expression and social bargaining.

- Chimpanzees express emotions and preferences shaped by their past experiences.
- According to Jensvold⁷, some prefer blankets, others straw, and some even choose bowls or spoons.
- When their needs aren't met, they show frustration, revealing their ability to feel and communicate like humans.

Helping and Sharing: Chimpanzees assisted with cleaning, shared food, objects, and cooperatively engaged in daily routines.

- Chimpanzees can cooperate in daily tasks like sharing food and helping with cleaning, showing strong social bonds.
- Other primates, like marmosets and a singly housed gorilla, also became more social and less aggressive with caregiver interaction^{12 13}, supporting chimpanzees' capacity for cooperative behavior.

Turn-taking and Patience: Chimpanzees waited during mealtimes, demonstrating awareness of social expectations.

- Chimpanzees understand social expectations and adjust their behavior based on how others interact with them.
- According to Jensvold⁷, they were more playful when caregivers used chimp behaviors and less interactive with only human behaviors.
- They can also understand spoken language, waiting calmly when told they'll be served next, showing awareness of turn-taking and social context.

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