

First Standardized Method to Study Turn-Taking in Cetaceans



Bottlenose Dolphin (*Tursiops truncatus*) Communicative Interactions: Methodological Insights into Turn-Taking Dynamics

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Turn-taking: Cooperative exchanges of short, alternating bursts of information between two or more individuals, governed by structured and universal rules (e.g., Sacks et al., 1974; Holler et al., 2015).

Background: Initially thought to be uniquely human, recent research suggests that turn-taking may be an ancient system with precursors in other species. However, systematic comparisons of turn-taking abilities across species is hindered by varying definitions and methodologies. Here, we aim to bridge this gap by proposing a standardized framework on four key hallmarks of human turn-taking using bottlenose dolphins as a model species.

PARTICIPATION FRAMEWORK "WHO is taking the next turn?"

GAZE

BODY ORIENTATION

Gaze and body orientation are two parameters to measure to whom individuals direct information.

FLEXIBILITY OF ORGANIZATION "HOW is it organized?"

RESPONSE WAITING

PERSISTENCE

ELABORATION

AND/OR

If there is no response, animals may repeat the same signal (persistence), or include a new signal or even a new modality (elaboration).

TEMPORAL RELATIONSHIPS "WHEN does the response occur?"

UNIT

HOLDING PHASE

RESPONSE

RESPONSE LATENCY

- ONSET - ONSET
- OFFSET - ONSET
- GAPS
- OVERLAP

Time is measured between a given signal/action and its response, either from the onset or the offset, enabling to assess overlap.

ADJACENCY PAIR-LIKE SEQUENCES "WHAT should the next turn do?"

Legend:

- Action
- Vocal signal
- △ Non-vocal signal

A first pair part (e.g., a request) is followed by a predictable response in the form of a second pair part (e.g., granting). This can include different modalities.

Outlook: We propose a **mixed-methods** approach (*video (drone, handheld, insta360) + acoustics*) approach to examine dolphin **vocal and non-vocal communication**, which will enhance our understanding of dolphin interactions while shedding light on the evolutionary similarities in communication systems across species.

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