Social Interactions Between Juvenile Killer Whales (*Orcinus orca*)

Brittany Coppinger, Amanda Cooler, Kaitlyn Gilbert, Haylee Herman-Haase, Sara Sperber & Michael Noonan
Canisius College,Buffalo NY

INTRODUCTION

There is now ample evidence in terrestrial species that social play is critical in the development of behavior, and this is particularly pronounced in long-lived, large-brained species. Much less information is available for marine mammals since the inaccessibility of their natural habitats affords observers with only brief glimpses of their intra-specific interactions.

Given that many marine mammals are themselves long-lived and large-brained, it can be expected that their social behavior similarly benefits from frequent rehearsals during juvenile-juvenile interactions. Indeed, assessing this category of behavior in marine mammals presents an opportunity to test the generality of the role played by such interactions in social development.

In an effort to address this topic, the present investigation documents the interactions that occurred between two juvenile male killer whales.

METHODS

The subjects of this investigation were two captive-born, male killer whales (*Orcinus orca*). They were housed, with their mothers, in a 5 million liter pool at Marineland of Canada (Ontario).

The whale's behavior was assessed from videotapes recorded while the subjects were between one and four years of age. Twenty one hours of randomly selected video segments were screened for instances of calf-calf proximity. Of those, nine temporal epochs of calf-calf interactions were chosen for closer scrutiny, along with five minutes before and five minutes after each interaction. This culminated in a total of 12.3 hours. Utilizing an ethogram-based, focal-animal paradigm, the occurrence of any one of 56 behaviors was recorded on a second-by-second basis over each epoch.

A repeated-measures ANOVA was used to compare the frequency of each behavior in the interacting and non-interacting conditions.

RESULTS

Of the initial twenty-one hours, the two calves spent 12.8% of their time within two meters of each other.

The findings derived from the second-by-second analysis o of the nine focal temporal epochs are presented in Table 1, which lists the twenty behaviors that showed the greatest differences between periods of calf interaction and non-interaction. The first ten rows present those behaviors which were more common during calf-calf interactions. The last ten rows present those which were more common when the calves were not interacting with each other.

Table 1: Juvenile Whale Behavior by Social State

	Juveniles Interacting	Juveniles Not Interacting	Ratio	ANOVA, p value
Chase	0.0166	0.0001	137.24	0.271
Follow	0.0631	0.0023	27.20	0.141
Circle	0.0003	0.0000	7.97	0.308
Left Turn	0.0012	0.0003	4.17	0.519
Parallel Swim	0.3173	0.0843	3.76	0.068
Open Mouth	0.0091	0.0034	2.64	0.394
Attempted Touch	0.0003	0.0002	1.99	0.658
Right Turn	0.0011	0.0006	1.90	0.361
Skyside Change	0.1045	0.0757	1.38	0.049
Body Shape Change	0.0113	0.0093	1.22	0.462
Look at	0.0033	0.0038	0.86	0.294
Breath	0.0323	0.0428	0.76	0.107
Fast Swim	0.0010	0.0014	0.75	0.331
Bubbling	0.0063	0.0088	0.72	0.058
Head Nods	0.0020	0.0029	0.68	0.176
Back Bend	0.0005	0.0008	0.66	0.602
Body Quiver	0.0002	0.0004	0.48	0.547
Jaw Pop	0.0001	0.0002	0.44	0.603
Push	0.0001	0.0004	0.25	0.500
Touch	0.0078	0.0967	0.08	0.290

DISCUSSION

These findings provide the first detailed description of juvenile-juvenile interactions in killer whales, and they characterize many details of the nature of play in this species.

Although admittedly based on a very small sample size, the results suggest a significant role for certain behaviors (chase, follow, circle, etc.) in calf-calf interactions. This is compatible with the view that rehearsal of social behaviors is the predominant form of play in this species.

ACKNOWLEGEMENTS

The authors are pleased to acknowledge the hospitality and support of Marineland of Canada.