



A Comparative Test of Creative Thinking in Dolphins and Preschool Children

Madison Bradley, Deirdre Yeater, Dawn Melzer, Heather Hill, Kathleen Dudzinski & Teri Bolton



Introduction

- Creativity tests, such as non-verbal tasks are able to assess cognitive processes, especially divergent thinking. With creativity, there is more room for expression, as there is less bias than a standard IQ test.
- The Torrance Tests of Creative Thinking (TTCT; Torrance, 1974) are the leading method of assessing creative abilities in an individual person. The TTCT evaluates four areas: Fluency, Flexibility, Originality, and Elaboration.
- In the current study, creativity was assessed in dolphins and preschoolers using a non-verbal modified TTCT (Kuczaj & Eskelinen, 2014). Both human and animal participants were trained using a “create” innovate prompt in which they would demonstrate a non-repeated novel behavior in order to be reinforced.
- Sessions were coded for fluency (number of novel behaviors demonstrated), originality, and flexibility (low, medium or high activity level).

Methods

Participants

- The present study consisted of 21 local preschoolers (11 males, 10 females) and 7 bottlenose dolphins (7 males) that were housed in Roatan Institute of Marine Sciences in Roatan, Honduras.

Procedure

- Both human and animal participants were trained using a “creative” innovate prompt in which they would demonstrate a non-repeated novel behavior in order to be reinforced.
- The session would last until the behaviors were no longer novel or repeated two times.
- Sessions were coded for fluency (number of novel behaviors demonstrated), originality, and flexibility (low, medium or high activity level)



Figure 1. Mean fluency and originality scores for the dolphins and children while under stimulus control.

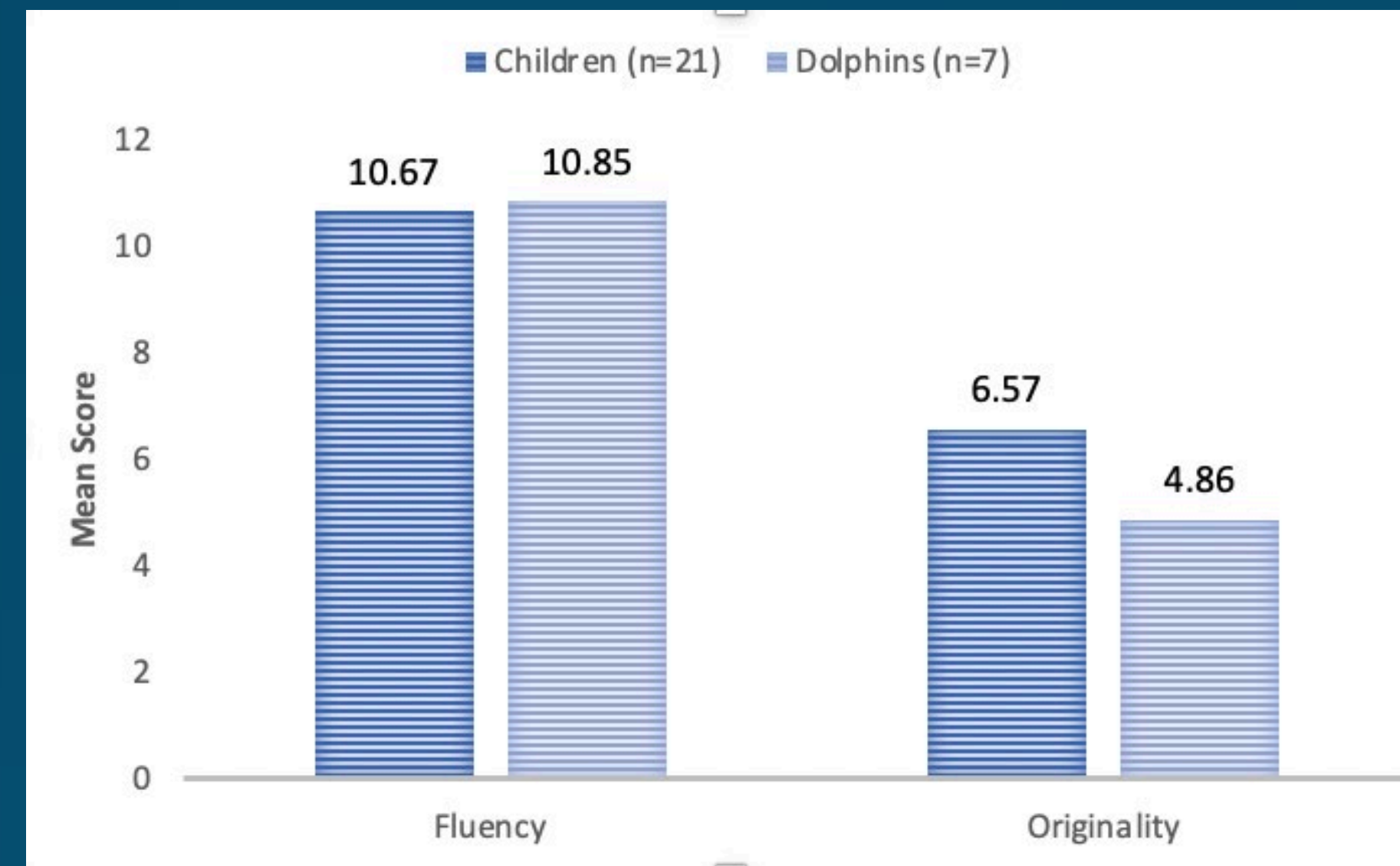
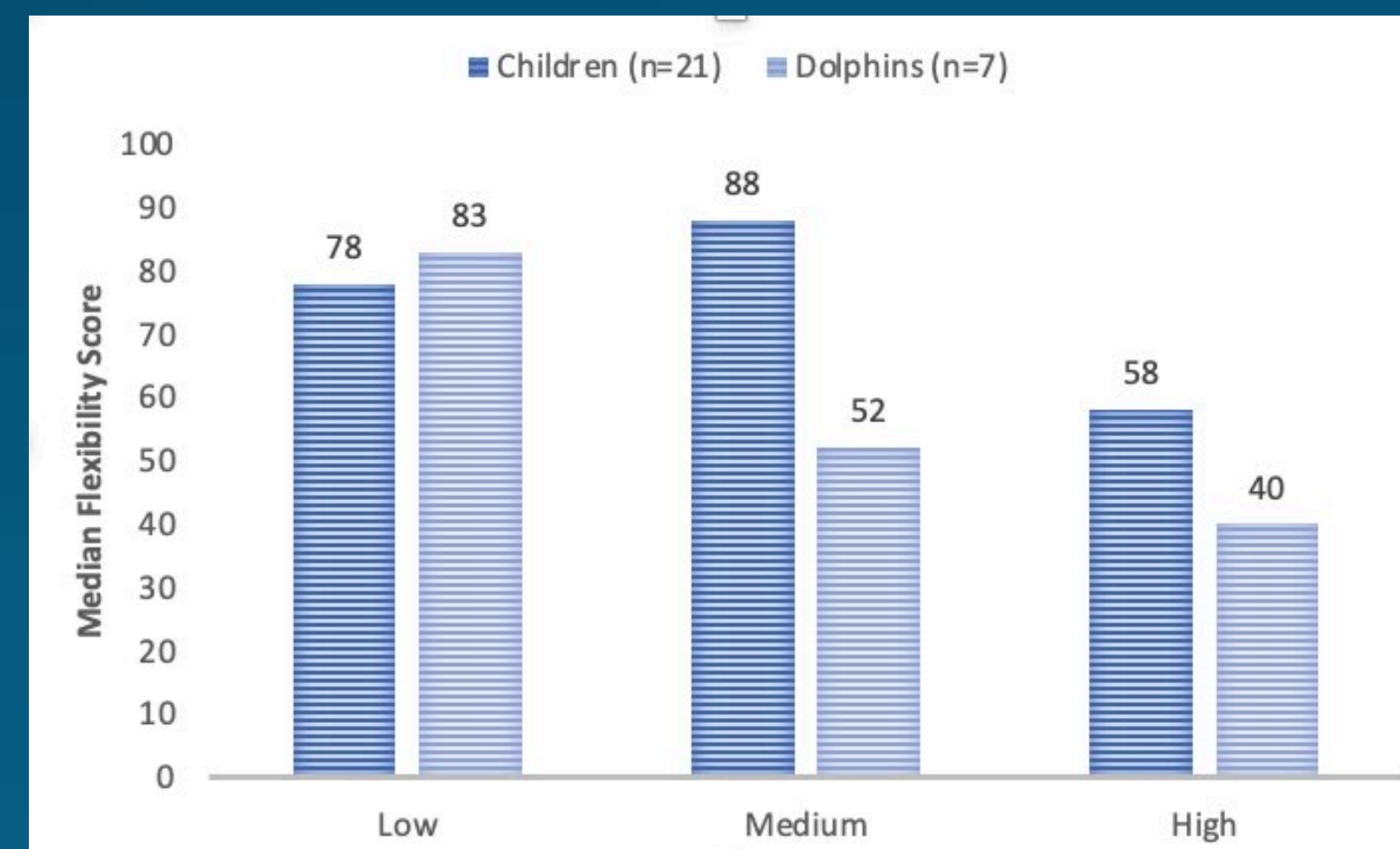


Figure 2. Median flexibility scores for the dolphins and children while under stimulus control.



Results & Figures

- The mean fluency scores were similar for both children and dolphins though children exhibited more original behaviors than dolphins (Figure 1).
- The median flexibility scores were similar for both groups in the low condition, but children created more medium and high behaviors than dolphins (Figure 2).

Discussion

- Training most likely influenced fluency and originality scores. When asked to “create” dolphins did not offer many novel actions and instead selected from a repertoire of previously trained behaviors.
- Children do not have behavioral training and are not similarly limited. While this led to more original innovate behaviors it may have also led to fewer behaviors since they did not have a previously reinforced behavior list to select from.
- This study extended our knowledge of how to create creative dolphins, while also learning how to test them.
- Given the limited understanding of creative abilities in animals and young children, this comparison using a modified version of the Torrance Tests offers exciting possibilities that may have a wide applicability to a variety to animals under human care and possibly children with developmental delays.

Acknowledgments

We would like to acknowledge the management and training teams at the Roatan Institute for Marine Sciences (RIMS) for collaborating with us on training and testing sessions to understand how dolphins can be innovative. A special thanks to Busy Beaver Preschool for allowing us to work with their children.

References

Kuczaj, S. & Eskelinen, H. (2014). The “creative dolphin” revisited: What do dolphins do when asked to vary their behavior? *Animal Behavior and Cognition*, 1, 66-77. Torrance, E. P. (1974). *Torrance tests of creative thinking*. Lexington, MA: Ginn.

