

# Francis, Heidi

## Testing Cognition in *Amazona* spp.

Faculty Mentor: Steven L. Peck, Integrative Biology

Animal intelligence has been studied for years, yet very few people are aware that parrots are ranked near the top with regards to cognition. For almost 20 years Dr. Irene Pepperberg has been teaching African Grey parrots to communicate using language, these birds then use English words to verbally answer questions testing their intelligence level. (Pepperberg, 1995) The teaching method used to do this is called the Model/Rival technique. For my research I chose to test whether this same technique could be used to teach a different species of parrot. Because of their speaking ability and large brain sizes comparable to that of the African Grey, I selected the Amazon parrot for this study.

The Model/Rival technique involves three-way interactions between two human students and the avian student. One person acts as the trainer of the second person in the presence of the bird. The trainer asks questions about an object shown. If the correct response is given by the human student, then the trainer gives the object, along with praise, to the human student. The object in question is always given as a reward to further reinforce the concept of words having meaning. Occasionally the human student will make an inappropriate response, choosing an incorrect answer similar to those being made by the bird at the time. When this happens the trainer scolds the human student and temporarily removes the object from sight. Once the bird sees what is happening he will attempt to join in. In this way the human student acts both as a model for the bird's responses and a rival for the attention of the trainer.

I purchased an 8-month-old Blue-Fronted Amazon parrot for this research. Considering the short duration of the study, I decided to teach only a very basic concept, that of object labeling. To do this with the Model/Rival technique, I would "teach" another person the label of an object, always choosing objects that the parrot, Sanka, was interested in. To avoid cuing, I would always ask the same question, "What is this?" for every object used. My human assistants would then give the correct answer and receive the object to play with or manipulate in a manner similar to what Sanka would do. I followed all of the protocol of the Model/Rival technique.

After six months of training Sanka, he is now able to correctly label two objects: "red vine," and "pen." However the regularity with which he answers correctly is not yet sufficient to be scientifically significant. There are several reasons why this may be.

First of all, Amazon parrots are very active and do not seem to have the attention span of the African Greys, which undergo 8-hour training sessions a day. Sanka would often lose interest before attempting to make a correct response. At other times Sanka would become frustrated with his inability to obtain the interesting object, and instead of watching the trainer/student interplay, he would find something else to amuse himself with.

Another reason Sanka did not completely grasp the labeling concept in this time might be related to his escape. Sanka flew away in August and was lost for five days. Upon his return it took a

long time for him to bond to me again. Amazons bond to one person, and this bonding is important for the Model/Rival technique to be effective. Otherwise the parrot would not care to rival for the trainer's attention.

And the last most crucial reason was probably a lack of time. Considering the Amazon parrot's shorter attention span, the training would have to go on for more than a year for documentable results to occur.

Sanka appears very bright yet occasionally refuses to answer correctly, seemingly out of stubbornness. He has picked up several words and phrases on his own, which he often uses correctly, but they were not taught to him using the Model/Rival technique.

Interspecies communication is a powerful and effective tool for determining intelligence. It provides a simple and direct way for subjects to be tested, while also allowing for comparisons with humans and with other species to be made. Furthermore, interspecies communication, such as a parrot speaking a human language, is flexible enough to allow subjects to respond in innovative ways, ways which may demonstrate an intelligence beyond that being determined by the intended task. (Pepperberg, 1995) I plan to continue training Sanka. Even though he has not yet fully grasped the labeling concept I am convinced from what this study has shown of Sanka's capacity to learn, that it is within his capability. With time I am sure that Amazon parrots will prove to have similar cognitive levels to those already discovered in African Greys.

#### Reference:

Pepperberg, Irene M. 1995 *Studies to Determine the Intelligence of African Grey Parrots*. [Online], Available: [http://www.mecca.org/~rporter/PARROTS/grey\\_al.html](http://www.mecca.org/~rporter/PARROTS/grey_al.html) [2003, December 15].