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# Overjustification of Effort by Pigeons

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## Abstract

When humans prefer outcomes that require greater effort to obtain, such preferences are attributed to cognitive dissonance or overjustification of effort. We demonstrate a similar effect in pigeons and attribute it to a within-trial contrast effect.

## Introduction

Overjustification of effort (Aronson & Mills, 1959) is a phenomenon that comes under the more general rubric of cognitive dissonance (Festinger, 1957). Overjustification of effort occurs when similar outcomes follow differential amounts of work. For example, if a student is taking a class in organic chemistry and one in physical education, and she receives an A in both classes, she may value the A in organic chemistry more, in spite of the fact that the two grades contribute equally to her grade point average.

The purpose of this experiment was to determine if we could produce a similar overjustification of effort effect in pigeons by way of shift in feeder preference towards a feeder associated with higher rather than lower effort.

## Method

### Subjects

Subjects were 18 White Carneaux pigeons maintained at 80% of their free-feeding weights.

### Apparatus

The experiment was conducted in a test chamber with a response panel containing three rectangular, horizontally aligned response keys (illuminated by projectors mounted behind each key) and a feeder opening under the left and right response keys.

### Procedure

**Group Correlated.** After baseline feeder preferences were established, on low effort trials, a yellow stimulus appeared on the center key and a single peck to it led to reinforcement provided by the more preferred feeder. On high effort trials, thirty pecks to the same yellow stimulus on the center key were reinforced by access to reinforcement in the less preferred feeder. Changes in feeder preference were assessed during sixty sessions of training.

**Group Uncorrelated.** Six pigeons were trained with the

same low and high effort responses but they were uncorrelated with the two feeders.

## Results

The pigeons in Group Correlated showed a significant shift in preference towards the originally less preferred feeder,  $F(1,11)=6.22, p=.03$ . The pigeons in Group Uncorrelated did not,  $F(1,5)=.01, p>.9$ .

## Discussion

The results of the present experiments confirm that pigeons too can show an overjustification of effort effect. They support the hypothesis that the value of a reward increases with the effort necessary to obtain it (see also, Clement, Feltus, Kaiser, & Zentall, 2000; Clement & Zentall, 2002). We explain this phenomenon in terms of a within-trial contrast effect. The state of the organism at the end of the high effort response is poorer than that at the end of the low effort response. The appearance of food thus represents a greater improvement in the state of the organism when it occurs after the high effort response.

The present research also has implications for cognitive dissonance research with humans. It may be that humans do not need to justify the additional effort expended to obtain comparable rewards but rather, rewards following greater effort are simply more rewarding for humans as well.

## References

- Aronson, E., & Mills, J. (1959). The effect of severity of initiation on liking for a group. *Journal of Abnormal and Social Psychology, 59*, 177-181.
- Clement, T. S., Feltus, J. R., Kaiser, D. H., & Zentall, T. R. (2000). 'Work Ethic' in pigeons: reward value is directly related to the effort or time required to obtain the reward. *Psychonomic Bulletin & Review, 7*, 100-106.
- Clement, T. S., & Zentall, T. R. (2002). Second-order contrast based on the expectation of effort and reinforcement. *Journal of Experimental Psychology: Animal Behavior Processes, 28*, 64-74.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Evanston, Illinois: Row, Peterson.