Abstract

This experiment was designed to investigate how implicit sequence learning varies when participants have different beliefs about the presence and nature of the pattern embedded in an alternating sequence task. In particular, we were interested in determining whether beliefs about the presence and nature of the pattern would affect performance on an implicit sequence learning task. To test these questions, we conducted a study with 24 subjects, ages 18-24, and asked them to try to find a pattern in a series of trials. The pattern was either a repeating or an alternating sequence. The results showed that participants who were informed about the pattern did better than those who were not. This suggests that the effect of explicit knowledge on Phase I was on performance rather than implicit learning.

Introduction

Explicit knowledge provided in the form of a context can facilitate retrieval of information. Furthermore, context is important not only for recall but also in processing of incoming information (Bransford and Johnson, 1972). What is less clear is how explicit knowledge affects implicit learning.

Willingham et al. (1999) suggested that in motor skill learning, explicit knowledge about the nature of the sequence can be useful in dual task situations. In this study, we sought to test whether explicit knowledge can be useful in a single task situation.

In the experiment reported here, we sought to test whether performance on an implicit sequence learning task varies when subjects have different beliefs about the presence and nature of the pattern. We were interested in determining whether beliefs about the presence and nature of the pattern would affect performance on an implicit sequence learning task. To test these questions, we conducted a study with 24 subjects, ages 18-24, and asked them to try to find a pattern in a series of trials. The pattern was either a repeating or an alternating sequence. The results showed that participants who were informed about the pattern did better than those who were not. This suggests that the effect of explicit knowledge on Phase I was on performance rather than implicit learning.

The Alternating SRT Task

- Four spatially arranged stimuli
- Subjects press corresponding keys
- Initial five presentations of patterns
- Pattern and random trials alternate
- Pattern four positions long
- Sample pattern: 1-2-3-1-2-3-1

Experimental Design

Task: Alternating SRT task
Subjects: 24 UC students, ages 18-24
Procedure:
- 4 conditions, 6 subjects in each:
  - Phase I: 4 conditions
  - 4 conditions, 6 subjects in each:
    - Phase I: 4 conditions
    - Phase II: All subjects treated the same: told no pattern
Measure of Implicit Learning:
- Number of errors: difference in performance between pattern and random trials.
Conditions: Phase I

- Condition 1: Told about the presence of the pattern.
- Condition 2: Told about the nature of the pattern and asked to try to find it.

Results

Phase I:
- Everybody showed learning, on at least one of the measures, by the end of Phase I.
- Response Time Measures:
  - There was no significant effect of instructional condition.
  - Accuracy Measures:
    - There was a significant effect of instructions.
- Instructions inaccurate and incidental groups performed better than other two groups.

Phase II:
- There were no group differences on either measure.

Conclusion

- Implicit learning of ordinal regularities can occur relatively independently of explicit knowledge.

Evidence

- During Phase I, some group showed learning, including the one group that was given false information about the pattern.
- There were small group differences in implicit learning during Phase I. For these discrepancies during Phase I, suggesting that the effect of explicit knowledge on Phase I was on performance rather than implicit learning.