2018 QUANTIFIED SELF CONFERENCE

Allen Neuringer
CONTINGENCY

CONTEXT

HABIT
The Ebbinghaus Forgetting Curve

Retention (100%)

Immediate Recall

- 19 min
- 63 min
- 525 min
- 1 day
- 2 days
- 6 days
- 31 days

Elapsed Time Since Learning

Hermann Ebbinghaus
Quality of Mood Before and After Exercise

DATE

- = mood before exercise
- = mood after exercise
A eating between meals; B no eating between meals.

Fig. 1. Daily hunger score as a function of time over the course of the experiment.
Table 1.
Chocolate Consumption and Incidence of Night Terrors

<table>
<thead>
<tr>
<th>Night terrors</th>
<th>chocolate consumption</th>
<th>(\chi^2)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Y 13</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>total</td>
<td>Y 4</td>
<td>26</td>
<td></td>
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<tr>
<td></td>
<td>N 22</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>total 17</td>
<td>42</td>
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<tr>
<td></td>
<td>25</td>
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</tbody>
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\(\chi^2 = 15.2\)

\(P < .001\)
Stuttering episodes per day

BASELINE: 32

8 Hrs. sleep: 36

Slowed speech: 30

BASELINE: 39

"mmm...": 21

Rhythmic speech: 9
Operant Variability and Voluntary Action

Allen Neuringer and Greg Jensen
Reed College

A behavior-based theory identified 2 characteristics of voluntary acts. The first, extensively explored in operant-conditioning experiments, is that voluntary responses produce the reinforcers that control them. This bidirectional relationship—in which reinforcer depends on response and response on reinforcer—demonstrates the functional nature of the voluntary act. The present article focuses on the second characteristic: a similar bidirectional relationship between reinforcement and the predictability/unpredictability of voluntary acts. Support for the theory comes from 2 areas of research. The first shows that levels of behavioral variability—from highly predictable to randomlike—are directly influenced by reinforcers. Put another way, variability is an operant dimension, analogous to response rate and force. The second source of support comes from psychophysical experiments in which human participants judged the degree to which “choices” by virtual actors on a computer screen appeared to be voluntary. The choices were intermittently reinforced according to concurrently operating schedules. The actors’ behaviors appeared to most closely approximate voluntary human choices when response distributions matched reinforcer distributions (an indication of functionality) and when levels of variability, from repetitive to random, changed with reinforcement contingencies. Thus, voluntary acts are characterized by reinforcement-controlled functionality and unpredictability.

Keywords: voluntary action, theories of free will, reinforced variability, concurrent schedules of reinforcement, choice
BEHAVIORAL VARIABILITY AND AUTISM SPECTRUM DISORDER

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Restricted and repetitive behavior is a diagnostic characteristic of autism spectrum disorder (ASD). To the extent that the behavior of individuals with ASD can be conceptualized as problems of invariance, our understanding of environmental variables that influence restricted and repetitive behavior may be informed by the basic and applied literature on response variability. The purposes of this paper are (a) to describe how restricted and repetitive behavior can be conceptualized as problems of invariance, (b) to consider the implications of a lack of varied responding for individuals with ASD, (c) to review relevant basic and applied research on response variability, (d) to present methods to address invariant responding for individuals with ASD, and (e) to suggest areas for future research.

Key words: autism, behavioral variability, invariance, response variability, restricted and repetitive behavior
SOS Methods

Observational
   Astronomy
   Economics

Experimental
   Physics
   Chemistry
Ned Conner’s Sleep Data

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