Making decisions in unsupervised environment

Daily judgments (e.g. judging the suitability of an apartment) often follow an unsupervised learning process, i.e. no objective criteria exist and no corrective feedback is provided.

Social judgment theory suggests that individuals make those judgments by weighing each cue by its importance and summing up the weighted cues linear additively:

\[
\text{Liking of an apartment} = \text{Price} + \text{Size} + \text{Eco efficiency}
\]

Goal: To investigate how people form unsupervised judgments and what degree those judgments can be learnt.

Which properties of the cues attract people's attention? (Exp. 1)
People focus on highly variable cues (Ell & Ashby, 2012)
People focus on informative cues (Pothos & Chater, 2002)

Do people integrate more than one cue into a judgement? (Exp. 1)
Supervised judgement: people integrate cues (Anderson, 1971)
Unsupervised categorization: people rarely integrate cues (Ashby, Queller & Berretty, 1999; Ell & Ashby, 2012)

Can others pick up these unsupervised judgment policies? (Exp. 2)
In unsupervised categorization people can learn unsupervised categorizations made by others (Colreavy & Lewandowsky, 2009)

An unsupervised judgment task with three cues

Experiment 1 (211 participants) Experiment 2 (yoked supervised*)
(114 females, M_{Age} = 36.1) (75 females, M_{Age} = 33.6)
Participants repeatedly judged multiple-cue objects, consisting of three lines varying in length, on a subjective scale from 0-100. In Experiment 2, the judgments from a previous participant served as feedback.

Judgment task

To investigate which properties of the cues attract attention we varied the distributions of line lengths (B, C, E).

Three distributions of line lengths

- Bi-shaped distribution (B):
  - High variability/
  - Low informativeness

- Equal distribution (E):
  - Medium variability/
  - High informativeness

- Central distribution (C):
  - Low variability/
  - Medium informativeness

Final 6 conditions

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<th>Abb.</th>
<th>Variability</th>
<th>Informativeness</th>
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Combine 3 lines to single out one cue with different line length distribution.

BBC condition:
Two lines with high variability
(B) distribution and one line with low variability
(C) distribution

Judgment consistency

A two way ANOVA results suggested that participants were less consistent in the conditions with less variable cues. F(2, 205) = 13.5, p < .001 \( \eta^2 = .12 \). Participants in the yoked supervised group were consistent (r = .59), suggesting they were able to learn the judgments from the unsupervised group.

Forecasting errors indicate that strategies integrating all cues, e.g. a regression, predict participants’ unsupervised judgments better than single-cue strategies.

Judgment policies in unsupervised judgments

Participants were highly consistent in their judgements in all conditions. Assuming they used rule-based strategies, they focused on variability of the cues and integrated them. Moreover, participants from the yoked supervised group were able to pick up the judgments made by their pairs, but they were, as expected, consistent to a lesser degree.

References


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