An Explanation of Why Inference Learners Sometimes Appear to Store Prototypical Features

Håkan Nilsson (hakan.nilsson@psyk.uu.se)
Department of Psychology, Uppsala University
SE-741 42, Uppsala, Sweden

Henrik Olsson (henrik.olsson@psyk.uu.se)
Department of Psychology, Uppsala University
SE-741 42, Uppsala, Sweden

Introduction
A range of studies indicate that inference learners and classification learners rely on different knowledge when making post training judgments (e.g. Yamauchi & Markman, 1998). The differences have been argued to be due to inference learners focusing on prototypical features whereas classification learners focus on diagnostic features or exemplars (e.g. Markman & Ross, 2003). This hypothesis will be referred to as the learning paradigm hypothesis (LPH). In the present study an alternative hypothesis, the directed attention hypothesis (DAH), is introduced. DAH suggests that, in previous studies, a confounding variable in the inference learning condition have created the illusion that all stimuli are identical to the prototypes.

Method
Two experiments using an experimental paradigm contrasting LPH and DAH were performed. In Experiment 1 there were four learning conditions, two inference learning conditions (IL) and two classification learning conditions (CL). In one IL and one CL the confounding variable was present (IL-confound and CL-confound). In the other two conditions it was not present (IL-standard and CL-standard). In experiment 2, only IL-standard and CL-confound was included.

Following a learning phase all participants performed a range of different judgment tasks (inference, full-classification, and 1-feature classification). If LPH is valid, participants in IL-confound and IL-standard should rely relatively more on prototypical features in these tasks. If DAH is valid, participants in IL-confound and CL-confound should rely relatively more on prototypical features in these tasks.

Results
The pattern of results for all dependent variables supports the DAH. A cluster analysis showed that in both experiments two clusters of participants emerged, those that relied on prototypical features (prototype cluster) and those that did not (non-prototype cluster). In line with DAH, but in contrast with LPH, a majority of the participants from the two confounded conditions ended up in the prototype cluster and a majority of the participants from the standard conditions ended up in the non-prototype cluster (see Table 1).

<table>
<thead>
<tr>
<th>Exp. 1</th>
<th>Exp. 2</th>
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<tbody>
<tr>
<td>IL-c</td>
<td>IL-s</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
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<tr>
<td>2</td>
<td>9</td>
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Discussion
Data from both experiments support DAH. This has serious implications for the literature of studies comparing inference learning to classification learning. Due to the confounding variable many results have to be reinterpreted.

References