# Data Processing
# Reading 3 Questions

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When perception is influenced by (prior) knowledge or expectations we are dealing with top-down (data-)processing. This can be a real implication when viewing a visualization. The user cannot know beforehand what to search for in the display and when the visualization isn't straightforward enough the user may make use of assumptions (based on prior knowledge/experience) that aren't applicable to the display of interest.

A well-known example is the "Rat-Man", which was part of a study of Bugelski and Alampay in 1961. In this study "users" were first shown either pictures of animals or pictures of (human) faces. They were then shown the picture above. Depending on whether the first series of pictures they were shown were animals or faces, participants reported seeing either a rat or an old man with glasses.

What we can can conclude from this experiment is that the interpretation of the "Rat-Man"-picture was largely influenced by prior experience. To be more precise: the objects most relevant to this specific "task" were mainly formed by prior experience, which in turn influenced the specific patterns and features they saw in the picture and thus influenced the lower level sensory data extracted from the image.

Of course this is an extreme example, taken the ambiguity of the image. Yet it demonstrates the existence and mechanisms of top-down data-processing perfectly and makes us realize the importance of unambiguity in data visualization in order to prevent such mistakes and make the user perform specific tasks correctly.