The “ease of retrieval” effect and the mental-system’s ease

Yaacov Schul & Naomi Yahalom

The Hebrew University

IDC – 30.6.2013
Content vs Metacognitive inputs to judgment

How assertive are you?

- You think about episodes in your life in which you were assertive

The content model
- How strong is the evidence?
- The more episodes you access \( \Rightarrow \) more assertive (N. Anderson)
- \( 10 > 4 \) (stronger evidence with 10 episodes than with 4 episodes)

The metacognitive model
- How easy is it to access the episodes?
- The more difficult it is to access assertive episodes \( \Rightarrow \) less assertive
- \( 4 > 10 \) (more difficult to access 10 episodes than 4 episodes)
Comparing content-based and meta-cognitive-based predictions

<table>
<thead>
<tr>
<th></th>
<th>4 episodes</th>
<th>10 episodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content based prediction</td>
<td>More assertive (more info)</td>
<td></td>
</tr>
<tr>
<td>Meta-cognitive prediction</td>
<td>More assertive (less difficult to access)</td>
<td></td>
</tr>
</tbody>
</table>

The meta-cognitive effect is termed “ease of retrieval”.

It underlies the Availability heuristic (Tversky & Kahneman, 1973)

First systematic comparison reported by Norbert Schwarz and colleagues in 1991
Cousins: other meta-cognitive effects

- Familiarity $\rightarrow$ truth
- Fluency $\rightarrow$ liking
- Encoding and retrieval ease $\rightarrow$ confidence
- Retrieval ease $\rightarrow$ fame

Not intuition or gist (a product of content-related associations)

Alter and Oppenheimer (2009)
Uniting the Tribes of Fluency to Form a Metacognitive Nation

The question of interest in this talk:
Moderation of the meta-cognitive effect
Moderation of reliance on metacognitive cues


General Hypothesis: More reliance on metacognitive cues when the mental system is relaxed – the system is at ease

Two obstacles to ease:

- Presence of other agencies (when another person is involved in determining my fate) – Yahalom & Schul, 2013, *Social cognition*
- Intrapersonal incoherence (when the task I am doing is not coherent within the task context)
The 4 / 10 ease-of-retrieval (EOR) paradigm

- List 4 (vs 10) episodes in which you behaved assertively in the past year
- Then, a surprising “test”: rate your assertiveness (DV)

<table>
<thead>
<tr>
<th>Comparison</th>
<th>4 episodes</th>
<th>10 episodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content-based prediction</td>
<td>less</td>
<td>more</td>
</tr>
<tr>
<td>Amount of information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliance on metacognition</td>
<td>easy</td>
<td>difficult</td>
</tr>
<tr>
<td>Ease of retrieval (EOR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicted EOR effect</td>
<td>Self rated assertiveness</td>
<td>Self rated assertiveness</td>
</tr>
</tbody>
</table>
Hypothesis:
People use EOR when social uncertainty is low (ease is high)

Two participants: randomly assigned to *chooser* and *performer*.

**Chance**: chooser selects a number that determines the task. Selection is done in the presence of performer.

**Choice**: Chooser goes to a separate room to select the task.

Task: list 4 / 10 episodes (determined randomly, regardless of selection).

![Bar chart showing self-rated assertiveness (1-8 scale) comparing chance and choice scenarios. The chart includes a note for the EOR effect.](chart.png)
Self-focus vs other-focus

- Participants sitting in library
- Experimenter asks: Are you willing to participate in the experiment? Those agreeing are assigned randomly

- **Self focus**: ..... Write down why you agreed to participate
- **Other focus** ... why the experimenter asked you to participate

- **TASK1**: list either 4 or 10 episodes of assertiveness and then rate your own assertiveness

- **TASK2**: Cognitive Reflection Test (CRT)
Results of self/other focus

Time to list episodes (min)
(similar pattern with difficulty)

Assertiveness
(1-8 scale)
The mechanism? (1)

• Interference1: thinking about the other interferes with generating “good” exemplars of assertiveness

  – No difference in generation time (between self & other)
  – No difference in rated difficulty
  – No difference in content (ratings by external judges)
  – No difference in rating of importance of the generation task
The mechanism? (2)

• Interference2: Thinking about the other functions as memory load

  – Memory load should **increase** rather than **decrease** reliance on gut feelings (cf., systematic vs heuristic processing)
The mechanism? (3)

- **Interference**: thinking about the other causes one to ignore gut-feeling. **Meta cognitive cues are not attended** when the other is involved.

- **Discounting**: meta-cognitive cues are attended to, **but not used** when the other is involved.

How do we separate these two mechanisms:
Dissociating the mechanisms

Find task2 that can make use of the ease-of-retrieval information.
If EOR exists in the “system”, it might be expressed in task2.

Why might? Because likelihood of reinterpretation is low.
Illustration:

EOR task: list 4 or 10 Chinese food restaurants in your home town.
This can serve as a basis for judgments about
(i) “being an expert in restaurants”
or (ii) “prevalence of restaurants” (Xu & Schwarz, 2005)
But, once you use the EOR for one judgment, it cannot serve as a basis for the other judgment.

• If EOR has been interpreted (e.g., as reflective assertiveness in self-focus condition) it can not indicate a different quality (e.g., as reflecting conscientiousness).
• If EOR has not been interpreted (e.g., in other-focus), it can be interpreted differently from assertiveness and used in the service of another task.
Investigating the mechanism behind the EOR effect

Task2 (Cognitive Reflection Test -- CRT, Frederick, 2005) was chosen to allow participants to finish quickly or take their time.

A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost? ____ cents

• We examine whether the time spent on the EOR task is associated with the time spent on the CRT.

• Prediction about Time to finish the Cognitive Reflection test

<table>
<thead>
<tr>
<th></th>
<th>few episodes (easy)</th>
<th>many episodes (difficult)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self focus (EOR interpreted)</td>
<td></td>
<td>=</td>
</tr>
<tr>
<td>Other focus (EOR not interpreted)</td>
<td></td>
<td>&lt;</td>
</tr>
</tbody>
</table>

Potential interpretations due to task2: I’m the kind of person who works hard, Or, this is the kind of experiment that require a lot of work
CRT

### Time to finish the Cognitive Reflection test (min)

<table>
<thead>
<tr>
<th></th>
<th>few episodes (easy)</th>
<th>many episodes (difficult)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self focus (EOR interpreted)</td>
<td>1.95</td>
<td>2.03</td>
</tr>
<tr>
<td>Other focus (EOR not interpreted)</td>
<td>1.71</td>
<td>2.68</td>
</tr>
</tbody>
</table>

**Conclusion:**
In the other-focus condition, the EOR was attended to and discounted. It influenced the CRT because it was not interpreted during the first task.
Interim Summary

• Findings: People relied on their Ease-Of-Retrieval (EOR) experience in the self-focus condition, but not in the other-focus condition.

• Interpretation1: We are not at ease when strangers can influence our destiny and therefore we do not apply the metacognitive cues

• Interpretation2 (more general): Social uncertainty leads us to reject gut feelings and immediate solutions and direct us to more distal informational cues (Schul et al, 2008).

• Next we investigate another source of unease -- due to context-task incoherence.
Context-task incoherence: The effect of background music

• Upon coming to the experiment participants were told that the study concerns personal abilities that will be assessed in a series of tasks.
• Half of the participants (music-present condition) were also told “In this experiment, you will hear music”. These participants heard a series of Israeli songs played in a relatively low volume via loudspeakers.
• The other half (music-absent condition) did not hear music
The ease-of-retrieval tasks

Either:

- **Music relevant**: list 4 (low difficulty condition) or 10 (high difficulty condition) arguments in the favor of using music as a didactic tool in Hebrew language lessons for non-Hebrew speakers

- **Music irrelevant**: list 4 (or 10) episodes in which you behaved assertively
Prediction from context/background-task coherence

<table>
<thead>
<tr>
<th></th>
<th>Music present</th>
<th>Music absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topic: music as didactic tool</td>
<td>Mental ease</td>
<td></td>
</tr>
<tr>
<td>Topic: assertiveness</td>
<td></td>
<td>Mental ease</td>
</tr>
</tbody>
</table>

Assumption: The default state of mind in a psychology experiment is “music absent”. Presence of music is not routine (not expected) unless supported by the task.

Prediction:

EOR effect when the mental system is at ease, At least stronger than when it is at unease
EOR effect is moderated by task-context coherence

Self rated assertiveness

Music effectiveness

List episodes of own assertiveness

List arguments in favor of using music as a didactic tool
### Self assertiveness versus music effectiveness

- We showed different patterns of sensitivity to the musical context.
- We interpret the pattern of findings as an effect of the ease of the mental system *(more ease when context & task are coherent)*.

<table>
<thead>
<tr>
<th></th>
<th>Music present</th>
<th>Music absent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic: music as didactic tool</strong></td>
<td>Mental ease</td>
<td></td>
</tr>
<tr>
<td><strong>Topic: assertiveness</strong></td>
<td></td>
<td>Mental ease</td>
</tr>
</tbody>
</table>

But, it might be *self* versus *non-self* judgment difference – which has nothing to do with the system’s ease.
Self-rated knowledge of music shows content effect when music is absent.

Self-rated assertiveness shows EOR effect when music is absent.
It is all in the head: The influence of background sound

The experimenter turned on low-level humming sound. Participants told that the experiment is about the influence of different background noises on visual, motor, and arithmetic performances in an attempt to study attention-deficit disorders.

**Hearing** condition: Participants are told to perform a series of tasks

**Listening** condition: Participants are told to perform a series of tasks while listening to background noise

- The warm up task is the 4 vs 10 assertiveness task.
- Then, 3 additional tasks, each for a set time: solving simple arithmetic problems, the digit-symbol task from WAIS, and learning and recalling a list of 20 words. There was no hearing vs listening effect in any of the 3 tasks.
EOR effect in Listening versus Hearing conditions

Self rated assertiveness

- Hearing: 4 episodes, 10 episodes
- Listening: 4 episodes, 10 episodes

EOR effect
Summary and speculations

• The mental system “consults” EOR when it is at ease.
  – When nothing in the task is unordinary
  – When one is not threatened by the [social] environment

• More generally, when at ease, the mental system turns to the immediate internal response, which might be a gut reaction or metacognitive cue.

• Mental unease can interrupt going with immediate gut reaction and allows one to be sensitive to secondary, often more complex attributes.

TRUST VS DISTRUST

• Impulsive behaviors such as those leading to the Stroop effect are stronger under trust (system at ease) than distrust.
• So are biases due to fluency, which tend to diminish or disappear under distrust
• Typically, when the system is at ease it tends to go with stimulus-congruent responses. Unease may reverse this, leading to stimulus-incongruent responses.
Should we strive for mental ease or unease?

When the environment is benign and expected, gut reaction might be good. It summarizes the past, it is fast, and more often than not, the successful past behavior is the best predictor of a successful current behavior.

When the environment is changing and unpredictable, gut reaction might be bad. It can be sensitive to aspects of the situation that had been important in the past, but are not so now. In a changing environment, therefore, it is useful to stop before committing to the immediate gut response.
Thanks for listening