The motivation-cognition interface in decision-making: Effects of motivational mode, age, and value
Jessica A. Cooper¹, Darrell A. Worthy², Sharon M. Noh¹ & W. Todd Maddox¹
¹The University of Texas at Austin Psychology Department; ²Texas A&M University Psychology Department

Introduction
We test the effects of age, value, and regulatory fit on performance in a dynamic decision-making task.

Age and Value
• Older adults perform better than younger adults in the 2-option version of this task. This advantage seems to be fragile, declining at increased levels of task difficulty.
• It is hypothesized that older adults engage more heuristics-based strategies and frontal resources as compensatory mechanisms.
• Younger adults’ activation during this task is modulated by a value-task to affect performance, with improved performance in dynamic incentives, and the psychological processes needed to achieve self-relevant resources, reserving effort for tasks that are engaging, interesting, or self-relevant.

Motivational mode
The motivation-cognition interface suggests that performance in cognitive tasks is affected by the interaction of global incentives, local signals, and the psychological processes needed to achieve optimal task performance.

It is also hypothesized that older adults selectively engage cognitive resources, reserving effort for tasks that are engaging, interesting, or self-relevant.

We hypothesize that increasing value and self-relevance will improve older adults’ performance in the difficult (4-option) version of this task.

<table>
<thead>
<tr>
<th>Reward Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>• History-dependent decision-making task</td>
</tr>
<tr>
<td>• Rewards depend on sliding window of 10 most recent selections</td>
</tr>
</tbody>
</table>

Effects of Value
High Value
Imagine that you are a doctor in charge of administering medication to a patient being treated for a life-threatening infection. After each drug administration, you will be shown your patient’s level of good antibodies, which have to remain high to keep the patient alive. Your goal for this task is to maximize the amount of life-saving antibodies over the course of the experiment.

Low Value
Imagine that you are a nutritionist in charge of providing dietary supplements for an individual who wants to increase their overall health. After each drug administration, you will be shown the individual’s level of good antibodies gained from taking the supplement. Your goal for this task is to maximize the amount of health-promoting antibodies over the course of the experiment.

Motivational Mode
The regulatory focus questionnaire is used to measure two subscales: prevention focus and promotion focus.

Prevention Focus: RFQ预言 < RFQ促进
Promotion Focus: RFQ预言 > RFQ促进

Conclusions
Age and Value
• Older adults in conditions with a high-value framing perform better in dynamic decision-making than those in a low-value framing. This may be due to selective engagement. Effects of value were not found for younger adults.

Motivational Mode
• Chronic regulatory focus was associated with performance in dynamic decision-making. Those in a match between regulatory mode and task reward structure performed better than those in a mismatch, potentially due to increased cognitive flexibility and the increased use of model-based strategies.

Future Directions
• Future work will examine effects of regulatory mode on older adults’ decision making performance and the relationship between chronic and situational regulatory focus.

References