CAREER: CHARACTERIZING ERROR MANAGEMENT COGNITIVE BIAS IN DESIGN - A PATH TO BETTER DESIGN

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NSF EDSE WORKSHOP
PURDUE UNIVERSITY
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CAREER Research Goals

1. To gain a deeper understanding of the role that error management cognitive bias plays in design process

2. To identify means to mitigate those cognitive biases in the design process

3. To test and validate the means to mitigate those cognitive biases in the design process

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Biases decision-making toward those that are less costly – from an evolutionary perspective, those that allow a greater chance of survival [10, 11]. False positives cost much less than false negatives.

<table>
<thead>
<tr>
<th>Cognitive Bias</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Loss Aversion</td>
<td>“Tendency to avoid options that result in a loss, and to perceive losses as more impactful than gains of equal value”</td>
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<tr>
<td>Sunk Cost</td>
<td>“Pursuing a strategy because of previous investment, despite the risk of further losses”</td>
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<tr>
<td>Confirmation Bias</td>
<td>“Tendency to seek out evidence, or interpret evidence in such a way, that is consistent with pre-existing beliefs, at the expense of considering belief inconsistent information”</td>
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<tr>
<td>Ownership Bias</td>
<td>“Tendency to attribute increased value to an owned entity”</td>
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<tr>
<td>Status Quo Bias</td>
<td>“Tendency to select a default option when one is present”</td>
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<tr>
<td>Framing</td>
<td>“Allowing the frame (positive or negative) of a problem to influence decisions”</td>
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<tr>
<td>Introspection</td>
<td>“Tendency to alter one’s preferences when prompted to analyze them”</td>
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<tr>
<td>Illusory Correlation</td>
<td>“Perceiving correlation where none exists”</td>
</tr>
</tbody>
</table>
Encourage interest in future studies and careers in STEM.

1. **Puppet-based STEM-focused Distance Learning curriculum**
   Diverse national audience of children in Title I schools

2. **On-site Puppet-based STEM education**
   Geared toward girls and minority children in Atlanta

3. **Georgia Tech UG Design Course**
   Cooperative STEM puppet interactive exhibit design course

4. **Assessment**
REFERENCES


