Investigating the Attentional Blink With Predicted Targets

Introduction

• Tan & Dark (2006) demonstrated that: (a) an AB ensued despite the fact T1 was known with certainty; (b) task strategies adopted by subjects based on prior knowledge of T1 identity modulated both T1 and T2 identification; and (c) T2 identification affected T1 identification in a lag-dependent manner.

• Three problems with Tan & Dark (2006): (a) Analysis of task strategy was based on post-hoc criterion rather than subjects’ self-report; (b) Task strategy effects might be confounded with T1 priming (or capture effects) independent of subjects’ intentions; and (c) All task manipulations involved T1, which might have affected T1 regardless of T2 identification.

• In the current study, we addressed these issues by: (a) having subjects report task strategies; (b) varying T1 cue validity to investigate whether effects independent of subjects’ intentions could account for task-strategy effects; and (c) cueing T2 identity to test whether T1|T2 lag effects occur without manipulation of T1.

Methods

• Targets were red letters while distractors were black letters.
• Trial began with a green letter predicting either T1 or T2 (See Figure 1).
• Validity of correct prediction varied (See Table 1).
• SOA was 96 ms (24 ms letter duration with 72 ms blank ISI). Lags were 1-5.
• Confirm strategy: subjects self-reported using green letter to identify target.
• Ignore strategy: subjects self-reported not using green letter to identify target.

Table 1: Overview of Experiments

<table>
<thead>
<tr>
<th>Expt</th>
<th>Green Letter</th>
<th>Task Strategy</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expt 1</td>
<td>Predicts T1</td>
<td>Confirm</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>75% validity</td>
<td>Ignore</td>
<td>8</td>
</tr>
<tr>
<td>Expt 2</td>
<td>Predicts T1</td>
<td>Confirm</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>25% validity</td>
<td>Ignore</td>
<td>21</td>
</tr>
<tr>
<td>Expt 3</td>
<td>Predicts T2</td>
<td>Confirm</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>50% validity</td>
<td>Ignore</td>
<td>13</td>
</tr>
</tbody>
</table>

Discussion

• The findings of Tan & Dark (2006) were replicated. T2 identification affects T1 identification. Extant AB theories (e.g. Chun & Potter, 1995; Di Lollo et al., 2005), which posit a serial processing account, need to address this effect.

• A cue congruency effect was found, however, subjects’ task strategies still affected the AB.

• Cue congruency effect might be due to priming or capture effects.

• When subjects used the cue, the AB effect still ensued when the cue was congruent, suggesting that the AB might be due to a failure to pass attentional control from T1 to T2 (Chua, 2005; Di Lollo et al., 2005).

• The present study does not distinguish the locus where T2 might affect T1, though we suspect that it is probably during consolidation. More research is required to clarify this issue.

Results

• All experiments showed an AB (T2|T1 lag effect) and a T1|T2 lag effect.
• Experiment 1 (Figure 2): T1 and T2|T1 identification indicated a task strategy effect, but also a cue congruency effect.
• Experiment 2 (Figure 3): Cue congruency effect was reduced for T1, T2|T1 and T1|T2 identification; task strategy affected only T1 identification.
• Experiment 3 (Figure 4): Task strategy affected T1, T2|T1 and T1|T2 identification. Cue congruency affected T2|T1 but not T1 or T1|T2 identification.

References: