The Processing of Positive and Negative Emotion-Laden Words During Reading: An Eye-Tracking Study

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BACKGROUND

- Previous research suggests that emotional stimuli have a processing advantage compared to neutral stimuli as measured through various methods (dot probe tasks, visual search tasks, lexical decision tasks, etc.). Specifically, emotion words are processed faster than neutral words (Altarriba & Canary, 2004).
- Emotion-laden words are words that activate an emotional component (e.g., funeral, birthday), but do not convey a specific emotion (e.g., sadness, joy). Processing of emotion-laden words has been found to differ from emotion words and neutral words, although effects are typically in the same direction (Knickerbocker & Altarriba, 2011).
- Knickerbocker et al. (2014) used eye-tracking to assess the processing of positive and negative words as compared to neutral words, and found an emotional processing advantage.
- The current study explores how normal readers process positive and negative emotion-laden words by exploring their eye movements during natural sentence reading.

METHOD

Experiment 1: Positive Emotion-Laden Words
- 66 skilled readers read 72 single-line sentences while eye movements were monitored with an Eyelink 1000 tracker.
- Sentences had a positive emotion-laden or neutral target word.

Experiment 2: Negative Emotion-Laden Words
- 60 skilled readers read 72 single-line sentences while eye movements were monitored with an Eyelink 1000 tracker.
- Sentences had a negative emotion-laden or neutral target word.

TABLE 1

<table>
<thead>
<tr>
<th>Measure</th>
<th>Positive</th>
<th>Neutral</th>
<th>Negative</th>
<th>Neutral</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Fixation (ms)</td>
<td>241</td>
<td>248</td>
<td>237</td>
<td>236</td>
</tr>
<tr>
<td>Gaze Duration (ms)</td>
<td>274</td>
<td>284</td>
<td>269</td>
<td>268</td>
</tr>
<tr>
<td>Skipping Rate (%)</td>
<td>15.0%</td>
<td>12.4%</td>
<td>12.3%</td>
<td>13.5%</td>
</tr>
<tr>
<td>Total Time (ms)</td>
<td>323</td>
<td>341</td>
<td>315</td>
<td>329</td>
</tr>
<tr>
<td>Regressions In (%)</td>
<td>12.0%</td>
<td>13.3%</td>
<td>13.5%</td>
<td>16.9%</td>
</tr>
</tbody>
</table>

DISCUSSION

- These findings support a general theoretical framework in which emotional stimuli capture attention, which then facilitates processing (Kousta et al., 2009) and extends it to emotionally-laden stimuli.
- This work supports other research that shows differences in processing positive words relative to negative words (e.g., Dahl, 2001; Estes & Verges, 2008; Knickerbocker et al., 2014; Scott et al., 2003). The effects of negative words may be less robust than those for positive words and may appear later in the time course of processing because negatively valenced words require more cognitive resources.

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