Response inhibition toward alcohol cues in heavy and alcohol dependent patients

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Introduction

• Addictive behaviors are strongly associated with poor response inhibition (Noël et al., 2008) and attention bias and automatic approach tendencies for alcohol-related stimuli (Wiers et al., 2007)
• Weak response inhibition for alcohol-cues is observed in alcoholics (Noël et al., 2007)
• Brand name utilization influences the attentional bias for alcohol (Cox et al., 2005)

⇒ Do heavy drinkers and alcoholics show a rapid automatic response for alcohol-cues?  
⇒ Do heavy drinkers and alcoholics show a deficient capacity to inhibit an automatic response for alcohol-cues?  
⇒ What is the influence of brand name?

Method

Participants:
• 20 heavy drinkers (10 males) and 20 light drinkers (10 males)
• 22 alcoholics patients (14 males) and 22 pair social drinkers (14 males)

GO-NOGO task modified for alcohol
• 75% GO trial and 25% NOGO trial  
• with or without brand

Examples of stimuli display

GO for alcohol drink vs NOGO for neutral object

GO for alcohol drink vs NOGO for soft drink

Results

Mean RTs to GO trial

<table>
<thead>
<tr>
<th></th>
<th>Alcohol Neutral</th>
<th>Alcohol Soft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy drinker</td>
<td>400</td>
<td>420</td>
</tr>
<tr>
<td>Light drinker</td>
<td>440</td>
<td>460</td>
</tr>
<tr>
<td>Alcoholics</td>
<td>500</td>
<td>520</td>
</tr>
<tr>
<td>Controls</td>
<td>540</td>
<td>560</td>
</tr>
</tbody>
</table>

Alcohol cue < soft and neutral (p<0.000001)  
No group difference

False alarm

Mean percentage of commission error to NOGO trial

<table>
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</thead>
<tbody>
<tr>
<td>Heavy drinker</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Light drinker</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Alcoholics</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>Controls</td>
<td>35</td>
<td>40</td>
</tr>
</tbody>
</table>

Alcohol cue < neutral (p<0.006)  
Soft cue > alcohol (p<0.0002)  
No group difference

Brand effect

Brand decreased RTs  
Brand increased false alarm for alcohol cues and decreased errors for neutral cues

Conclusion

• All participants were faster to respond to alcohol drinks than soft drinks and neutral objects  
⇒ Rapid automatic approach for alcohol in all populations
• Alcoholics were slower to respond to all stimuli  
⇒ Speed cognitive process deficit in alcoholics patients
• All participants show a weak response inhibition for alcohol compared to neutral objects, but the opposite effect was observed when alcohol was compared with soft drinks in the non-alcoholic population  
⇒ Generalization to all drink pictures in drinkers?
• Brand increased response rapidity but increased errors for alcohol  
⇒ Stimulus features influence cognitive bias for alcohol
• No faster automatic response for alcohol-cues or weak response inhibition for alcohol-cues is observed in heavy drinkers or alcoholics

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