How bad could it be? Alcohol’s effect on startle to uncertain intensity threat

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AIM 1: BAC BY THREAT TYPE

- SP was analyzed in a general linear model (GLM) with repeated measures for threat intensity (uncertain vs. high vs. low) and fully interactive between subject regressors for Peak BAC, Gender, Block Order, and Baseline startle.
- At BAC = 0%, there was a significant increase in SP during uncertain vs. certain (high/low) threat, $B = 17.4 \mu V$, $p < 0.001$. SP was significantly increased during high vs. low threat, $B = 10.0 \mu V$, $p = 0.050$.
- A significant effect of BAC was observed across threat types such that SP decreased $2.2 \mu V$ (for every .01% increase in BAC, $p < 0.002$).

* The BAC effect was significantly increased during uncertain ($B = -3.5 \mu V$) vs. certain (high/low) ($B = -1.6 \mu V$) threat, $p = .011$ (see figure above). The BAC effect was comparable across high ($B = -1.5 \mu V$) vs. low ($B = -1.6 \mu V$) threat, $p = .990$.

AIM 2: LINEARITY OF BAC EFFECT

1. Statistical tests confirmed that all model assumptions, including linearity, were met.
2. Visual inspection of residuals (overall and across range of BACs) also confirmed model assumptions (see figure right).
3. Parameter estimates for more complex BAC functions (e.g., quadratic, cubic) were not significant.

AIM 3: BAC BY THREAT TYPE BY BASELINE STARTLE

- At BAC = 0%, a significant effect of baseline startle was observed across threat types such that SP increased $23 \mu V$ (on average for every 1% increase in baseline startle, $p = .001$).
- The magnitude of the baseline startle effect was significantly increased during uncertain ($B = .34$) vs. certain (high/low) ($B = .17$) threat, $p = .024$. The baseline startle effect was comparable across high ($B = .18$) vs. low ($B = .18$) threat, $p = .746$.
- Baseline startle significantly moderated alcohol’s effects on uncertain ($B = .04$) vs. (high/low) ($B = .05$) threat, $p = .017$ (see figure below). Baseline startle did not moderate alcohol’s effect to high ($B = .01$) vs. low ($B = .02$) threat, $p = .253$.

SUMMARY

- If a threat is coming, will get a stressor is going to occur (e.g., will I get fed?); will I run out of money? constitutes a dimension of uncertainty conceptually distinct from uncertainty about how bad a stressor may be (e.g., how much trouble will I be in?). Our findings support the assertion that alcohol reduces anxiety in the face of ambiguous threats regardless of the source of that ambiguity.

- Using a novel beverage manipulation we confirmed that the dose response function of alcohol on SP to threat was linear, with alcohol producing some SRD even at low doses.

- Present data suggests that baseline startle predicts the magnitude of SRD effects on anxiety.

- Still, other aspects of uncertainty (e.g., the where dimension) should be tested as elicitors of anxiety (see poster 1.10 this session). Uncertainty about positive events (e.g., in gambling) may also prove sensitive to alcohol effects.

REFERENCES AND SUPPORT