

# The DRAM, Vol. 6(10) - Loko for Four Loko? The effects of alcoholic energy drinks

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Recently, alcoholic energy drinks (AEDs) have been mentioned frequently in the news, often in connection with the controversy and inquiry into Four Loko. The concern over AEDs arises primarily from the purported reduction of the subjective symptoms of intoxication, potentially leading to unsafe levels of alcohol consumption. However, there have been few studies objectively exploring the effects of AEDs. This week's DRAM reviews three such studies (Curry & Stasio, 2009; Ferreira, de Mello, Pompéia, & de Souza-Formigoni, 2006; Marcziński & Fillmore, 2006).

## Methods

- Table 1 provides a summary of the study designs for all three papers.
- Ferreira et al. (2006) used a within-subjects design, providing participants with one beverage per separate-day session and monitoring their blood alcohol concentrations (BACs) at regular intervals. Participants also rated symptoms such as tiredness, dizziness, nausea and general well-being at 30- and 120-minutes post-beverage and completed a pegboard task to assess motor coordination.
- Curry and Stasio (2009) used a between-subjects design, randomly assigning participants to one of three beverage groups. Researchers assessed participants' neuropsychological functioning before and 30 minutes after beverage consumption using the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS).
- Marcziński and Fillmore (2006) used a within-subjects design, providing participants with one beverage at a time. Participants performed the dual-interference task before and after consuming each beverage and rated the strength of each drink.

Table 1: Summary of methods from the three studies

	<b>Ferreira et al. (2006)</b>	<b>Curry &amp; Stasio (2009)</b>	<b>Marczinski &amp; Fillmore (2006)</b>
Sample	26 Brazillian men, each tested three times, once with each beverage	27 college-aged women, randomly assigned to 3 groups	6 adult men and 6 adult women, each tested six times, once with each beverage condition
Beverages	Red Bull (control) Vodka Vodka & Red Bull (0.6 or 1.0g/kg) Approx. 400mL (13oz) per drink	Orange SPARKS (AED) Monster (nonalcoholic ED) Diet 7-up (control) 473mL (16oz) per drink	Lemon soda with 0 or 0.65g/kg alcohol and 0, 0.2 or 0.4 mg caffeine Approx. 230mL (7oz) per drink
Measures	BAC Subjective ratings of symptoms Motor coordination	RBANS: immediate memory, delayed memory, visuospatial/constructional, attention and language subscales	BAC Dual task interference time Ratings of intoxication

## Results

- Ferreira et al. (2006)
  - BAC level did not differ between the Vodka and Vodka & Red Bull sessions.
  - Compared to alcohol alone, participants reported lower sensations of tiredness, dizziness, headache, and weakness, and alterations to speech, walking, sight, and hearing after the AED. Participants also rated their general well-being higher after the AED.
  - There was no difference between alcohol-only and AED conditions on the fine-motor coordination task.
- Curry and Stasio (2009)
  - The AED group scored lower on the RBANS, specifically the visuospatial/constructional and language scales than the control group.
  - There were no differences between the alcohol and regular energy drink groups.
- Marczinski and Fillmore (2006)
  - BAC level did not differ by drink type (i.e., with or without caffeine).
  - Performance and error on the dual interference task did not differ by drink type.
  - Participants rated the caffeinated beverages as less strong than

those without caffeine; ratings did not differ by caffeine dose.

## **Limitations**

- All three studies had limited sample sizes.
- All studies administered the drinks as a single strong drink. Providing several servings over time would be a more realistic scenario.
- The three studies did not assess inclination to drink, so it is unclear whether people consuming AEDs are inclined to drink more than those drinking just alcohol.

## **Conclusions**

Taken together, these three studies suggest that the addition of caffeine to alcohol drinks does not affect objective measures of intoxication (e.g., BAC, motor coordination, interference test performance). However, this research also reveals that participants who consume AEDs have lower subjective ratings of intoxication (i.e., headache, drink strength etc.); this circumstance might encourage people to consume alcoholic energy drinks because they feel less intoxicated. Regardless, AEDs can create a potentially dangerous gap between perceptions of intoxication and actual intoxication. This difference might lead to risky behaviors, such as driving or excessive additional drinking.

— Daniel Tao

*What do you think? Please use the comment link below to provide feedback on this article.*

## **References**

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