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# Energy Drink Consumption and Stress Levels of Undergraduate College Students Who Are Introverts and Extroverts

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# ENERGY DRINK CONSUMPTION AND STRESS LEVELS OF UNDERGRADUATE COLLEGE STUDENTS WHO ARE INTROVERTS AND EXTROVERTS

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## ABSTRACT

The purpose of this quantitative comparative analysis study was to determine the difference between perceived stress levels, and caffeine consumption (energy drinks) among undergraduate college students who are introverts and extroverts. Study questions include: Is there a difference in levels of caffeine consumption (energy drinks) and students who are introverts and students who are extroverts? Is there a difference between students who consume caffeine (energy drinks) and stress levels? IRB approval was obtained for this study. Participants (N = 93) were Undergraduate students and a sample of convenience. The study consisted of men (n = 47) and women (n = 46). An anonymous survey was distributed, and was self-disclosure style discovering gender, age, perceived and actual introvert/extrovert personality type, their caffeine consumption (energy drinks), and their perceived and actual stress levels. The survey included two Likert scales, one to determine level of stress, and another to establish introvert or extrovert status. From select questions in the stress scale, the results suggested that those who consume caffeine (energy drinks) were prone to a higher perceived stress levels.

## BACKGROUND

The history of the effects of caffeine have been extended over time. Initial research began in 1912 by Hollingworth about the potential effect of Coca-Cola in relationship to the mind (Landrum & Meliska, 1985, p. 4). Later, in 1982 Estler suggested that in test situations caffeine "increased vigilance and decreased fatigue" (Landrum, & Meliska, 1985, p. 4). In a 1985 study "a significant positive correlation was found between extroversion/introversion scores and caffeine consumption, suggesting a strong relation between extroversion and caffeine use" (Landrum & Meliska, 1985, p. 1). Pettit and DeBarr (2011) concluded that there was a correlation between energy drinks and perceived stress. Caffeine is now more accessible in different varieties. Energy drinks have become more popular. "In 2002, retail sales of energy drinks totaled \$1.2 billion, but increased 440% to \$6.6 billion in 2007" (McIvlin, Noland, Bickel 2011, pg 253).

## METHODS

The sample included all students who filled out the entire survey (n=43) at North and South Campuses of Montana Tech, Butte, MT, USA. All volunteers were enrolled at the college for the spring semester of academic calendar year 2014-2015. Researchers were not present during the distribution and collection of all surveys. Participants viewed the survey and wrote their answers down on a volunteer basis. All human subjects were protected following Institutional Review Board Guidelines (IRB) through the University of Montana. The study included participants age 18 or over with no participants under the age of 18. All students were asked to participate, but could waive their right to participate.

## RESULTS

**Table 1**  
Frequency Distribution of Independent Variables

Variable	Entire Sample (N = 93)
Independent Variables	(M) (S)
Gender	
Male	(47) 51%
Female	(46) 49%
Age	
18- 24 (Traditional)	(70) 75%
25+ (Non-Traditional)	(23) 25%
Personality Type	
Introvert	(45) 48%
Extrovert	(48) 52%
Consume Energy Drinks	
Yes	(24) 26%
No	(69) 74%
RedBull	
8oz.	(2) 16%
12oz.	(8) 61%
16oz.	(3) 23%
Rockstar	
16oz.	(8) 89%
20+oz.	(1) 11%
Monster	
16oz.	(9) 82%
20+oz.	(2) 18%
NOS	
16oz.	(2)
Wired	
16oz.	(3)
Other	
16oz.	(2) 50%
20+oz.	(2) 50%
Cans Consumed/Week	
8oz.	(18) 75%
12oz.	(4) 17%
16oz.	(1) 4%
20+oz.	(1) 4%

**Table 2**  
Difference in Levels of Caffeine Consumption (Energy Drinks) between Introverts and Extroverts  
Frequency Distribution

Variable	Extrovert (n = 45)	Introvert (n = 48)
Consume Energy Drinks		
Yes	14	10
No	31	38
RedBull		
8oz.	2	0
12oz.	4	4
16oz.	3	0
Rockstar		
16oz.	6	2
20+oz.	0	1
Monster		
16oz.	5	4
20+oz.	2	0
NOS		
16oz.	1	1
Wired		
16oz.	2	1
Other		
16oz.	2	0
20+oz.	0	2
Cans Consumed/Week		
8oz.	10	8
12oz.	3	1
16oz.	0	1
20+oz.	1	0

**Table 3**  
Cronbach's Alpha Stress

Index	Questions
Stress Scale (.862)	<ol style="list-style-type: none"> <li>1. In the last month, how often have you been upset because of something that happened unexpectedly?</li> <li>2. In the last month, how often have you felt that you were unable to control the important things in your life?</li> <li>3. In the last month, how often have you felt nervous and "stressed"?</li> <li>4. In the last month, how often have you felt confident about your ability to handle your personal problems?</li> <li>5. In the last month, how often have you felt that things were going your way?</li> <li>6. In the last month, how often have you found that you could not cope with all the things that you had to do?</li> <li>7. In the last month, how often have you been able to control irritations in your life?</li> <li>8. In the last month, how often have you felt that you were on top of things?</li> <li>9. In the last month, how often have you been angered because of things that were outside of your control?</li> <li>10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?</li> </ol>

**Table 4**  
Levene's Test for Equality of Variances Differences between Energy Drink Consumption and Stress levels

Variable	M	SD	t	β
Stress Scale			1.43	.160
Yes	2.92	.584		
No	2.72	.658		
Upset			-.124	.902
Yes	3.00	1.02		
No	2.97	.873		
Unable to Control Things			.463	.646
Yes	3.12	.991		
No	3.01	1.05		
Nervous/Stressed			-.016	.988
Yes	3.75	.989		
No	3.75	.929		
Confident			3.12	.003**
Yes	2.45	.658		
No	1.94	.802		
Things Going Your Way			2.39	.019*
Yes	2.95	.750		
No	2.42	1.00		
Could Not Cope			-.404	.689
Yes	2.58	1.01		
No	2.68	1.03		
Control Irritations			2.09	.042*
Yes	2.79	.779		
No	2.39	.878		
Felt on Top of Things			2.52	.015*
Yes	2.79	.721		
No	2.33	.885		
Angered			-.059	.954
Yes	3.00	1.02		
No	3.01	1.10		
Difficulties			.444	.160
Yes	2.79	1.02		
No	2.68	1.13		

## CONCLUSION

Upon running the data of the research, there were no significant differences between introverts/extroverts when considering caffeine (energy drink) consumption. The same was true when data was run with the entire stress scale, which was composed of ten Likert scale questions. Only upon looking at the individual stress questions was significance found. In four of the stress questions there was a significant difference in those who consume caffeine (energy drinks). From select questions in the stress scale, the results suggested that those who consume caffeine (energy drinks) were prone to a higher perceived stress levels. It is unclear from this study whether the caffeine (energy drinks) is causing the stress or participants are drinking caffeine (energy drinks) because they are stressed. The sample size is considered a limitation to this study particularly for the participants consuming energy drinks.

## FUTURE STUDIES

Although a small sample size was used for this study, some interesting percentages were evidenced within the sample. In the frequency distribution of the independent variables chart, under cans consumed per week section, 8 oz. cans were shown to have the highest consumption. The only energy drink that comes in 8 oz. is RedBull which is also used in popular alcoholic beverages. Further research on the rising trend of caffeine and alcohol could be of benefit and interest to students, faculty/staff of most colleges. Additional research is recommended given the growing trend of increased energy drinks.

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