

COLLEGE STUDENTS' USE OF CAFFEINE AND ITS RELATIONSHIP TO PERSONALITY

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One-hundred and sixteen college students completed the Caffeine Consumption Questionnaire (CCQ), a self-report measure that yields milligrams/week caffeine usage, and students also completed a number of personality measures. The results from the normative data indicated some gender differences in the measures, and a significant positive correlation between caffeine use and extroversion, replicating earlier findings. The CCQ allows general users and researchers a precise and consistent measure of caffeine use, and can be used as a tool to pursue other potential relationships between student characteristics and caffeine use.

Caffeine is perhaps the most widely used psychoactive drug in the world, found in coffee, tea, cocoa, chocolate, soft-drinks, and over-the-counter preparations. The present study addresses the measurement of self-reported caffeine consumption by college students and its relationship to personality variables. A small number of studies have previously examined caffeine consumption in college students, with varying results. While Loke (1988) reported low caffeine use in college students, Vener and Krupka (1982) and Johnson-Greene, Fatis, Sonnek, and Shawchuck (1988) found students to be using high levels of caffeine. Some patterns of caffeine use do emerge across studies, though: students consume more caffeine when studying for an exam (Loke, 1988; Vener & Krupka, 1982); women use more caffeine than men (Vener & Krupka, 1982); older students use more caffeine than younger students (Johnson-Greene et al., (1988); and caffeine use and personality traits appear to be related (Landrum, Meliska, & Loke, 1988; Revelle, Amaral, & Turriff, 1976).

Since so many patterns of caffeine use have emerged when studying college students, why the disagreement over the amount consumed? Two problems exist: the lack of a consistent measurement instrument, and a lack of preci-

sion in measurement. For example, Vener and Krupka (1982) and Johnson-Greene et al. (1988) asked students a sequence of open-ended questions, without reporting what questions they asked. Other studies, such as Loke (1988) and Wilson (1990), do report how caffeine use is measured but due to a lack of precision, these studies underestimate caffeine use. For example, Wilson (1990) scored 1 point for tea and soft drink use and 2 points for a cup of coffee. Amount consumed, brewing method, particular soft drink, etc., are all factors which have a significant impact on the actual number of milligrams of caffeine contained in a substance.

The present study developed and refined the Caffeine Consumption Questionnaire (CCQ), an instrument designed to precisely measure self-reported weekly caffeine use. Student responses on the CCQ were used to explore potential relationships with personality variables, focusing on possible relationships with extroversion-introversion and morningness-eveningness. Prior research has indicated a significant positive correlation between caffeine use and extroversion (Landrum et al., 1988). This study was a replication and extension of that earlier work.

Method

Subjects. One-hundred and sixteen (57 female, 59 male) undergraduate students enrolled in general psychology courses at UW-

Platteville participated in this study for course credit.

Materials. Although the Caffeine Consumption Questionnaire (CCQ) has been used

Figure 1
CAFFEINE CONSUMPTION QUESTIONNAIRE (CCQ)

Please answer the following questions as completely and honestly as you can. This information is STRICTLY CONFIDENTIAL -- do not write your name anywhere on this page. Thank you for your cooperation. (c) 1988 R. Eric Landrum

Please answer the following questions about your caffeine usage. Respond to items that you consume at least once a week.

COFFEE (5 oz. servings/week)	MORNING 6am-12nn	AFTERNOON 12nn-6pm	EVENING 6pm-2am	NIGHT 2am-6am
Regular brewed	_____	_____	_____	_____
Percolated	_____	_____	_____	_____
Drip-brewed	_____	_____	_____	_____
Regular instant	_____	_____	_____	_____
Decaffeinated	_____	_____	_____	_____
Brewed	_____	_____	_____	_____
Instant	_____	_____	_____	_____
TEA (5 oz. serv./week)	_____	_____	_____	_____
COCOA (5 oz. serv./week)	_____	_____	_____	_____
CHOCOLATE (8 oz. serv./week)	_____	_____	_____	_____
SOFT DRINKS (12 oz. servings/week)	MORNING 6am-12nn	AFTERNOON 12nn-6pm	EVENING 6pm-2am	NIGHT 2am-6am
Coca-Cola	_____	_____	_____	_____
Dr. Pepper	_____	_____	_____	_____
Mountain Dew	_____	_____	_____	_____
Mr. Pibb	_____	_____	_____	_____
Tab	_____	_____	_____	_____
Pepsi Cola	_____	_____	_____	_____
Diet Pepsi	_____	_____	_____	_____
RC Cola	_____	_____	_____	_____
Mello Yello	_____	_____	_____	_____
OVER-THE-COUNTER DRUGS (tablets/week)	MORNING 6am-12nn	AFTERNOON 12nn-6pm	EVENING 6pm-2am	NIGHT 2am-6am
Vivarin	_____	_____	_____	_____
NoDoz	_____	_____	_____	_____
Excedrin	_____	_____	_____	_____
Vanquish	_____	_____	_____	_____
Anacin	_____	_____	_____	_____
Dristan	_____	_____	_____	_____
Dexatrim	_____	_____	_____	_____

The CCQ as administered to students. To score the questionnaire yielding a milligrams/week measure, use the following caffeine amounts: percolated, 110.0 mg; drip-brewed, 150.0 mg; regular instant, 66.0 mg; decaffeinated-brewed, 4.5 mg; decaffeinated-instant, 2.0 mg; tea, 45.0 mg; cocoa, 13.0 mg; chocolate, 6.0 mg; Coca-Cola, 42.0 mg; Dr. Pepper, 61.0 mg; Mountain Dew, 49.0 mg; Mr. Pibb, 57.0 mg; Tab, 45.0 mg; Pepsi, 35.0 mg; Diet Pepsi, 34.0 mg; RC Cola, 36.0 mg; Mello Yello, 32.0 mg; Vivarin, 200.0 mg; NoDoz, 100.0 mg; Excedrin, 65.0 mg; Vanquish, 33.0 mg; Anacin, 32.0 mg; Dristan, 16.2 mg; Dexatrim, 200.0 mg.

previously (Landrum et al., 1988), it was refined for the present study to include time of day information about caffeine use; the CCQ can be found in Figure 1. The Myers-Briggs Type Indicator [MBTI] (Briggs-Myers, 1977), the sociability-impulsivity subscales from the Eysenck Personality Inventory [EPI] (Eaves & Eysenck, 1975), the Hollingsworth Extroversion Scale [HES] (Hollingsworth, 1931), and the Morningness-Eveningness Questionnaire [MEQ] (Horne & Ostberg, 1976) were all administered to each subject.

Procedure. Subjects completed the questionnaires in groups varying from 1 to 12. All subjects completed the MBTI last; for the

remaining inventories (CCQ, EPI, HES and MEQ), order of presentation was randomized for each group of subjects. Subjects received the following amounts of time to complete each questionnaire: EPI-4 minutes, HES-5 minutes, CCQ-8 minutes, MEQ-8 minutes, and the MBTI-15 minutes. All questionnaire packets were completed with a 50-minute time limit.

Results

Overall mean scores, and the means for females and males are presented in Table 1. Significant gender differences were found on the MBTI-Thinking/Feeling Scale, $t(114) =$

Table 1
Overall Mean Scores for Dependent Variables and Means for Females & Males

<u>Variable</u>	<u>Overall</u>	<u>Females</u>	<u>Males</u>
Age	20.1	19.9	20.2
Year in School	1.96	1.94	1.96
MBTI-EI	102.2	99.0	105.2
MBTI-SN	93.00	97.5	88.6
MBTI-TF	96.3	97.5	88.6
MBTI-JP	99.7	104.8	94.9
MEQ	48.2	46.4	49.9
EPI-Sociability	7.34	7.53	7.15
EPI-Impulsivity	4.75	5.21	4.31
EPI Total	12.08	12.74	11.46
HES	5.07	6.11	4.07
Morn. Caffeine	246.0	252.5	239.7
Aft. Caffeine	242.6	218.6	265.7
Eve. Caffeine	267.5	227.2	306.5
Night Caffeine	8.90	7.40	10.34
TOTAL Caffeine	768.90	713.72	822.20

Notes. Age in years. Year in School: 1=Freshman, 2=Sophomore, 3=Junior, 4=Senior. Myers-Briggs Type Indicator [MBTI]; EI, E < 100, I > 100, SN, S < 100, TF, T < 100, F > 100, JP, J < 100, P > 100. MEQ: 70-86 Definitely Morning, 59-69 Moderately Morning, 42-58 Neither Type, 31-41 Moderately Evening, 16-30 Definitely Evening. EPI-Sociability, EPI-Impulsivity: higher score, more of trait. EPI total: higher score, more extroverted. HES: higher score, more extroverted. Caffeine intake: in milligrams/week.

8.23, $p < .0001$, the MEQ, $t(114) = -2.20$, $p < .05$, and the EPI Impulsivity Scale, $t(114) = 2.48$, $p < .05$. Overall intercorrelations between the variables are presented in Table 2. Of particular note are the correlations between caffeine use and personality measures, and the lack of a significant correlation between caffeine use and morningness-eveningness. In terms general CCQ results (i.e., normative data), the decile

ranges for the caffeine scores overall and for each gender group are presented in Table 3.

Discussion

The Caffeine Consumption Questionnaire (CCQ) provides a much needed, consistent tool for the measurement of caffeine consumption. Whether college students are high or low caffeine consumers is a relative issue—the normative data provided here will allow

Table 2
Overall Intercorrelation Matrix for Dependent Variables

Variable	OVERALL								
	Age	YearSch	MBTI-EI	MEQ	EPI-Soc	EPI-Imp	EPI-Tot.	HES	Tot. Caff.
Age	----	.298*	.143	-.020	.222*	-.130	-.216	-.080	.129
Yr in School		----	-.054	-.016	-.005	-.114	-0.52	.072	.175
MBTI-EI			----	.106	-.852**	-.419**	-.796**	-.690**	-.152
MEQ				----	-.125	-.1196*	-.173	-.032	.044
EPI-Socialbility					----	.483**	.430**	.604**	.178*
EPI-Impulsivity						----	.770**	.180*	.161
EPI Total							----	.516**	.197
HES								----	.090
TOTAL Caffeine									----

Note: * = $p < .05$, ** = $p < .001$

Table 3
Overall Decile Ranges for the CCQ in Milligrams/Week
and the Decile Ranges for Males and Females

	Overall Range	Males Range	Females Range
10 Decile	1276 - 11,595	1301 - 11595	1201 - 6198
9th Decile	1006 - 1275	1071 - 1300	700 - 1200
8th Decile	661 - 1005	913 - 1070	630 - 699
7th Decile	534 - 660	601 - 912	501 - 629
6th Decile	451 - 533	461 - 600	441 - 500
5th Decile	350 - 450	346 - 460	350 - 440
3rd Decile	151 - 225	151 - 225	151 - 250
2nd Decile	71 - 150	71 - 150	71 - 150
1st Decile	0 - 70	0 - 70	0 - 70

Notes: All measures in milligrams/week. N = 116.

for comparisons with other college populations. Further, individual students taking the CCQ can now receive some feedback as to their own personal caffeine consumption compared to the norms.

Significant correlations were found with the EPI personality scales, supporting the general findings of previous research (Landrum et al., 1988). Similarly, Johnson-Greene et al. (1988) found that those more aware of the caffeine content of substances used more caffeine than those unaware of the amount of caffeine in substances.

The use of caffeine by college students is sensitive to a number of variables, including gender, age, whether studying for an exam, or just the specific situation at hand (Rall, 1980). Although whether a student was a morning or evening type was not related to caffeine use, degree of extroversion was significantly positively correlated with caffeine use. Intercorrelations between the various extroversion measures were also significant, indicating a fair amount of validity between the personality measures.

The CCQ is a measurement device to assess weekly caffeine intake. With the norms provided, individuals can measure caffeine intake levels more precisely and have some indication of relative standing compared to a typical college student population.

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