Identification of Cola Beverages: II. A Further Study

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In an earlier study,[1] the present investigators gave four different Cola beverages (Coca Cola, Pepsi Cola, RC Cola and Vess Cola) to 108 *Ss* to identify. Results showed an almost total absence of Vess Cola identifications. Instead of responding with the fourth brand name, *Ss* tended to repeat the name of one of the other three beverages listed. These results were interpreted as indicating lack of a gustatory basis for the *Ss'* identifications. It was suggested that these responses were a function of a ready labelling of the series of Cola beverages with a stock of naming reactions that seemed to be related to thoroughness of advertising and other forms of culturalization.

Further confirmation of the correctness of such an explanation came from the results of administering four samples of the same Cola beverage respectively to each of four groups of 15 *Ss*. The picture was not essentially different from that obtained with the 108 *Ss*. As a result, the hypothesis was developed that if only three beverages were used, the identifications would be distributed in an order approximating chance. The present experiment was designed as a test of the above hypothesis.

Procedure

The subjects of the present study consisted of two groups—96 *Ss* in Part I and 60 in Part II. These were beginning students in Elementary Psychology courses.

Part I. Each of 96 *Ss* was admitted individually into the experimental room and was invited to sit down. The following instructions were then read to him.

"We would like to have you taste and identify some Cola drinks. You will be told in what order and when you are to drink them. After you have finished each sample, report your identification to E and take enough water from the paper cup before you to rinse your mouth well."

A tray containing three one-oz. glasses of Coca Cola, Pepsi Cola and RC Cola respectively was placed before the *S*. He was then told to drink the beverages labelled x, y, and z in the order indicated to him.

[1] Pronko, N. H., and Bowles, J. W., Jr. Identification of Cola beverages: I. First study. *J. appl. Psychol.*, 1948, 30, 304–312.

Samplings were spaced about a minute apart, *S's* name and other information being recorded in the interval between drinks.

The order of presentation of the three beverages, determined preexperimentally, was such that each of the three stimuli appeared in the first, second and third position 32 times. This counterbalanced order was used to preclude the operation of position effects or stimuli interactions orally. All beverages were kept out of sight of *Ss* and were placed in a refrigerant maintained at approximately 5°C.

Part II. In Part II, 60 *Ss* were administered the *same* Cola drink at each of three trials. Thus, 20 got all Coca Cola; 20, all Pepsi Cola; and 20, RC Cola. In all other respects, the procedure was the same as that of Part I.

Results and Discussion

Inspection of Table 1 shows that, as in the previous study which utilized four different Colas, the three most common identifications are apparently related to the three most frequently advertised Colas with a sprinkling of such unexpected beverages as Root Beer, Dr. Pepper, Nehi, and Red Rock.

Table 1

Showing the Distribution of 288 Identification Responses When Each of the 96 *Ss* Was Presented in Turn, but in Counterbalanced Order, with a 1 oz. Sample of Coca Cola, Pepsi Cola, and RC Cola

	Frequency of *Ss'* Various Identification Responses										
Brand Given *S*	C.C.	Pep.	R.C.	Dr.Pep.	Cleo	Fount. Coke	Root Beer	Red Rock	Nehi	D.K.	Totals
Coca Cola	39	26	22				1	1	1	6	96
Pepsi Cola	35	36	20		1					4	96
RC Cola	15	34	34	2	4	2		1		4	96
Totals	89	96	76	2	5	2	1	2	1	14	288

Coca Cola is properly identified 39 times but is misidentified as Pepsi Cola 26 times and as RC Cola 22 times while Pepsi Cola is correctly identified 36 times but is also misidentified as Coca Cola 35 times and as RC 20 times. RC Cola is correctly named 34 times but is misidentified as Pepsi Cola exactly as often and as Coca Cola 15 times. Perhaps the low frequency of misidentifications as Coca Cola is due to the higher frequency of misidentification with other beverages.

From Table 2 of Part II (where each of 20 *Ss* was given three samples of the *same* Cola) it will be noted that results are not much different. Coca Cola is identified as Coca Cola 27 times but is misidentified as Pepsi Cola 20 times and as RC nine times. However, when Pepsi Cola

Table 2

Showing the Distribution of 180 Identification Responses When Each of the 60 *Ss* Was Presented with Three 1 oz. Glasses of Either Coca Cola, Pepsi Cola, or RC Cola

Brand Given *S*	Frequency of *Ss'* Various Identification Responses							
	C.C.	Pep.	R.C.	7 Up	Dr.Pep.	Vess	D.K.	Totals
Coca Cola	27	20	9	1	1		2	60
Pepsi Cola	22	19	17		2			60
RC Cola	27	15	17			1		60
Totals	76	54	43	1	3	1	2	180

is given three times in succession, it is said to be Pepsi Cola 19 times, Coca Cola 22 times and RC 17 times. As regards RC Cola, it is correctly identified as RC only 17 times but wrongly identified as Pepsi Cola 15 times and as Coca Cola 27 times! In every instance, regardless of the stimulus used, Coca Cola is the response of greatest frequency. It is conjectured that these results may reflect the relative effectiveness or extent of the advertising employed by the three main Cola competitors.

Table 3 shows the percentage of correct responses when *Ss* were given three *different* Colas. Note that for Coca Cola this percentage is 41 as compared with 38% for Pepsi Cola and 35% for RC Cola. It is suggested that the slight differences among the three categories of correct identifications is a function of a relatively greater frequency of certain naming responses. Apparently this interpretation is valid because an examination of Table 4, which shows classification of identification responses when the three samples consisted of the same Cola for each *S*, indicates a similar trend. Although Coca Cola is given to the *Ss* each of three times, it is correctly identified 45% of the time but is misidentified 55% of the time, this, despite the fact that Coca Cola naming responses constituted 76 of the total 180 responses. Although the Cocal Cola response is given over and over, nevertheless it does not yield a high

Table 3

Identification of Cola Beverages by 96 *Ss* When Each *S* Was Presented a Sample of Each of Three Brands

Identification	Brands of Cola Presented							
	Coca Cola		Pepsi Cola		RC Cola		Totals	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Correct	39	41	36	38	34	35	109	38
Incorrect	57	59	60	62	62	65	179	62
Totals	96	100	96	100	96	100	288	100

batting average. As regards Pepsi Cola, it is correctly identified only 32% of the time and is misidentified over twice as often (68%)!

Results for RC Cola are even more striking. This beverage is misidentified 72% of the time. The low percentage of correct identification (28%) is, perhaps, a function of the greater frequency of occurrence of the Coca Cola response. *Ss* could not get in as many RC Cola namings

Table 4

Identification of Cola Beverages by 60 *Ss* When Each *S* Was Presented Three Samples of the Same Brand

Identification	Brands of Cola Presebted							
	Coca Cola		Pepsi Cola		RC Cola		Totals	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Correct	27	45	19	32	17	28	63	35
Incorrect	33	55	41	68	43	72	117	65
Totals	60	100	60	100	60	100	180	100

because they had exhausted this opportunity by giving the "Coke" response too often. The overall picture shown in Table 4 is also important. The total number of correct identifications, 63 out of 180, gives a value of 35%, which means that 65% of the responses were misidentifications. These results are in line with the expected 33⅓% of correct namings, which might occur "by chance."

In the previous study, when four different Cola beverages were employed, results suggested that the pattern of naming responses was a

Table 5

Critical Ratio Tests of the Hypothesis That the Distribution of the Various Identification Responses to the Three Cola Beverages Are Not on the Basis of Actual Taste Stimuli

Beverage Used	How Identified								
	As Coca Cola			As Pepsi Cola			As RC Cola		
	Diff	σ_{diff}	Critcal Ratio	Diff	σ_{diff}	Critical Ratio	Diff	σ_{diff}	Critical Ratio
Coca Cola	.105	.071	1.478	.062	.064	.968	.043	.073	.589
Pepsi Cola	.060	.070	.942	.042	.067	.626	.070	.072	.972
RC Cola	.164	.130	1.184	.021	.067	.313	.114	.077	1.480

function of the *Ss'* familiarity with Cola brand names. If that hypothesis is correct, then in this study with use of three brands of Cola, we should expect on a statistical basis to get a chance distribution of Cola names *regardless* of beverage employed. Actually, Table 5 proves our

hypothesis. The correct identifications of the three respective Colas do not differ significantly from chance expectancy since it will be observed that no critical ratio approaches 2.0 and only three are above 1.0. In other words, in applying names to identify the three Colas our *Ss* might

Table 6

Critical Ratio Tests of the Hypothesis That the Distribution of the Various Identification Responses to the Three Cola Beverages Are Not on the Basis of Actual Taste Stimuli

	How Identified								
	As Coca Cola			As Pepsi Cola			As RC Cola		
Beverage Used	Diff	σ_{diff}	Critical Ratio	Diff	σ_{diff}	Critical Ratio	Diff	σ_{diff}	Critical Ratio
Coca Cola	.022	.076	.280	.037	.059	.627	.124	.092	1.340
Pepsi Cola	.044	.077	.571	.019	.089	.213	.062	.101	.613
RC Cola	.022	.076	.280	.055	.086	.639	.062	.101	.613

just as well have drawn such names from a hat. Comparison of Table 5 with Table 6, which latter shows results of Part II where each of the three stimuli given *Ss* were the same, indicates similar results. Critical ratios for percentage of correct responses again do not show a difference from chance expectancy. With one exception (a *CR* of 1.3), all *CRs* are below .70.

Table 7

Critical Ratio Tests to Determine Whether Differences Between Percentages in Results of Part I and Part II Are Significant

	Brands of Cola Presented			
Statistic	Coca Cola	Pepsi Cola	RC Cola	Totals
P_1 (% correctly identified in Part I)	41%	38%	35%	38%
P_2 (% correctly identified in Part II)	45%	32%	28%	35%
P_1–P_2	4%	6%	7%	3%
σ_{diff}	.081	.078	.076	.046
Critical Ratios	.494	.769	.921	.652

As a final test of our hypothesis, we present the data of Table 7. Here are compared the correct responses in Part I (three different Cola samples) and Part II (three samples of the same Cola). The differences in correct naming responses are not statistically significant as evidenced by the extremely low significance ratios. For the Coca Cola, Pepsi Cola

and RC Cola categories the *CRs* are respectively .49, .77 and .92, indicating that the pattern of naming is essentially the same regardless of presentation of (a) three different samples of Cola or (b) three samples of the same beverage.

Summary and Conclusions

A group of 156 *Ss* was asked to identify one-oz. samples of the following three Cola beverages: Coca Cola, Pepsi Cola and Royal Crown (RC) Cola. In Part I, 96 *Ss* were presented one of each of three different Colas and in Part II, 60 *Ss* were given three samples of the *same* beverage, being evenly divided among the three different classes.

In general, results show that whether *Ss* are given three different beverages or the same beverage three different times, the identifications are not essentially different in the two cases. All critical ratios are extremely low and lack statistical significance. Within the limits of the present experiment, the findings permit the generalization that when subjects are asked to discriminate and identify Cola drinks, they might do just as well by drawing the names of those beverages out of a hat.

Received February 6, 1948.