



Validation of a New Coffee Cold Brew Method through Combined Central Location Tests and a Modified Conjoint Analysis and Focus Groups with Cold Brew Consumers and Brewers



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Introduction

Cold brew coffee is a fast-growing category. The purpose of this research was to validate a new cold brew method (NEW) against two market-leading cold brew methods (ML1 and ML2) over medium and dark roast coffee, through combined central location tests and a modified conjoint analysis and focus groups with cold brew consumers and brewers.

Materials & Methods

Central location test- 160 Gen Z and Millennial cold brew consumers evaluated the 3 coffees within each roast in the Sensory Theater at UC Davis for liking on the 9-point hedonic scale, adequacy of select attributes on Just-About-Right (JAR) scales, sensory properties using Check-All-That-Apply (CATA), open comments, and preference ranking, and then completed an exit survey (Figure 1), all with RedJade (Redwood City, USA).

Focus group and modified conjoint analysis- 22 brewers of cold brew were given a demonstration of the 3 methods of brewing. Next they evaluated the coffee-method combinations through a modified conjoint analysis. Finally they participated in a focus group to assess the advantages and disadvantages of the new method of brewing.

Coffee preparation- a Colombian green coffee was roasted to medium and dark roasts. The New cold brew method and 2 other leading cold brew methods were used to brew the coffees. Coffee was diluted to a Total Dissolved Solids (TDS) of around 1.8%, as measured using a VST handheld coffee refractometer.

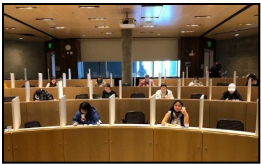


Figure 1A: Sensory Theater where consumers evaluated the coffees in booths.



Figure 1B: Central location test setup for each consumer. Medium roast coffees were tasted first.

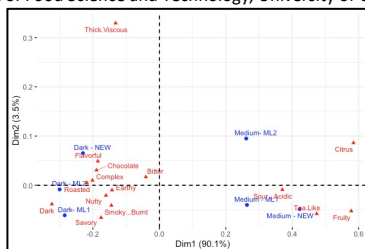


Figure 1. Correspondence analysis of CATA selections in the CLT showing sensory and holistic attributes and coffees.

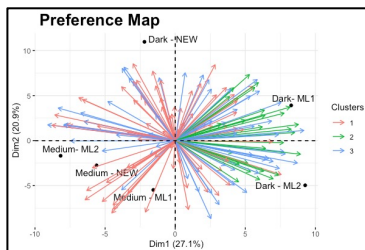


Figure 3. Preference mapping based on the overall liking score of the coffees in the CLT.

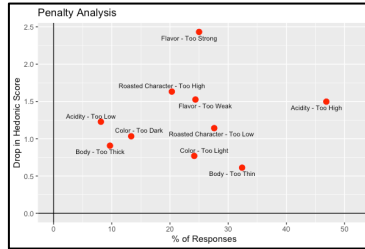


Figure 5. Penalty analysis relating the overall liking score to JAR selections in the CLT.

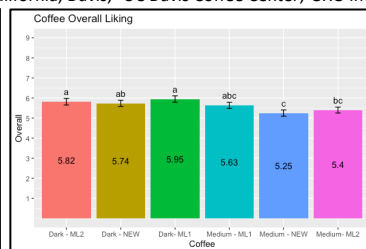


Figure 2. Mean overall liking ratings (and LSDs) of the coffees in the CLT.

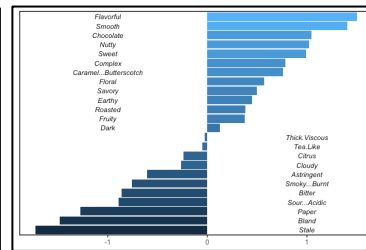


Figure 4. Penalty analysis relating the hedonic ratings to CATA selections in the CLT.

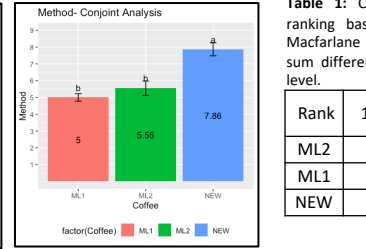


Figure 6. Liking scores for the method in the conjoint analysis

Results

- The flavor profile of the coffees was mostly roast driven (Figure 1).
- Dark roasted coffees were generally liked more than medium roasted coffees. There were no differences among brew methods (Figure 2).
- Three preference segments were uncovered with the largest preferring dark roasted coffees (Figure 3).
- Penalty-lift analysis suggests smooth, nutty, roasted, dark as positive drivers of liking, and sour/acidic, burnt as negative drivers of liking (Figure 4)
- Penalty analysis shows that too much acidity incurred the largest point penalty (Figure 5). The sourness/acidity of medium roast coffees was rated too high by most consumers (Data not shown).
- Based on the conjoint analysis, the NEW method of brewing (and its coffees) were liked more than the market leading methods (Figure 6). Yet, preference rankings of the coffee-method combinations were similar (Tables 1 & 2).

Conclusion

Quantitative and qualitative consumer testing methods showed consumer acceptance of both coffees brewed with the NEW cold brew method and of the NEW cold brew method itself.

Table 1: Conjoint analysis - preference ranking based on **Coffee**. Using Newell Macfarlane Ranking tables, Absolute rank sum difference is "16" at 5% Significance level.

Rank	1st	2nd	3rd	Sum of ranks
ML2	8	6	8	44
ML1	5	7	10	49
NEW	9	9	4	39

Table 2: Conjoint analysis - preference ranking based on **Method**. Using Newell Macfarlane Ranking tables, Absolute rank sum difference is "16" at 5% Significance level.

Rank	1st	2nd	3rd	Sum of ranks
ML2	7	4	7	36
ML1	2	7	8	40
NEW	9	6	2	27