



“Effects of bottle closure type on consumer perception of wine quality”

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- The authors bottled a 1999 Merlot (targeting \$18 retail price) and a 2000 Chardonnay (targeting \$10) with 3 types of closures each: natural corks, synthetic corks, and screwcaps. (The two first closures had vacuum-assisted filling and cork insertion, whereas in the screwcap bottling line, this feature was not available). After storage neck-up in a warehouse ($10 \pm 2.8^{\circ}\text{C}$) for 33 months, the wines were brought to the right temperature (Chardonnay to 10°C , Merlot to 21°C) and then were evaluated by a panel of consumers in the course of **2 experiments**. The consumer panel was recruited off the streets of Portland, Oregon. Individuals between the ages of 21 and 65 were selected for each test (60+ for experiment 1; 100+ for experiment 2) based on their interest, availability, and frequency of white and red wine consumption.

- **Experiment 1: Difference tests.** The goal of this experiment was to see whether consumers could tell the difference between the same wine that had been bottled with different types of closures. To do that, the authors compared two closures at a time, using several sets of *triangle tests*. (Triangle tests allow researchers to achieve greater test power with fewer participants). Basically, the participants were given a set of three Chardonnay samples, two of which were from the same bottle closure type, and the third from a different closure type, and were asked the question “Which is different”? They were given no information concerning closure type for any sample. On a different day, they did the same routine with Merlot.

- **Experiment 2: Quality assessment.** The goal of this experiment was to see if the consumer ratings before the panel knew the type of closure (blind tasting) were any different from the ratings after this information had been disclosed. To find out, they conducted the tasting routine twice. The *first time* around, the panel was asked to score “overall liking” (semi-structured scale with 3 verbal anchors), “overall quality” (semi-structured scale with 3 verbal anchors), “purchase intent” (5 categories) and “price willing to pay” (7 categories, ranging from \$6 to “over \$16”) on blind samples, one wine sample at a time. The *second time* around, they used a similar regime, but the samples were identified –this time the panelists scored the three closure samples at the same time. Each wine was accompanied by a photograph of the corresponding closure type. By comparing the two panel ratings, the researchers were able to find out if there had been any bias in the consumers’ scoring when they knew the type of closure they were rating.

- **Results Experiment 1: Difference tests.** Consumers could not detect a difference between the Chardonnay wines bottled with the three different closures. Same thing for the Merlot wines. Frequent wine consumers (drank wine 2-3 times a month) were not any more skilled in detecting a difference than infrequent wine consumers.

· **Results Experiment 2: Quality assessment.** For **Chardonnay**, the mean *liking rating* was lower when the consumers knew that the wine had a synthetic cork; and it was much lower when they knew it had a screwcap. As for the *quality ratings*, they were significantly lower only when consumers knew the wine had a screwcap. For **Merlot**, knowing the type of closure did not change the consumers *liking rating*. But consumers increased their *quality rating* when they knew that the wine had a natural cork. In other words, knowing a wine was bottled with a screwcap decreased both liking and quality perception in Chardonnay, whereas knowing that a natural cork was used increased quality perception in Merlot.

· **Knowledge and attitudes toward closures.** Through additional questions in the tasting ballot, the authors found that most participants believed that the main reason why wineries used alternative closures is because they are less expensive. Only 30 to 55% of participants in the different tests believed alternative closures could prevent wine spoilage, indicating that consumers are not well informed. Most participants believed that synthetic corks were acceptable substitutes for natural corks, whereas few (20%) believed that screwcaps were acceptable. In agreement, most participants would buy wine with a synthetic cork, whereas few would buy wine with a screwcap. This data was collected in March 2004, and the authors admit attitudes likely have changed since with greater consumer exposure to alternative closures.

In conclusion, can consumers detect a difference between wines bottled with three different types of closure? The authors found that the answer is “No”. And, does knowing the type of closure affect consumer perception of wine quality? The authors found that the answer to this one is “Yes”. At the time of the study, a *synthetic cork*, and to an even greater degree, a *screwcap*, caused a wine to be perceived as being of lower quality; whereas a *natural cork* caused a wine to be perceived as being of higher quality. As Australia and New Zealand have shown, these attitudes are ever-changing and highly dependent on familiarity and market exposure.

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