



klöckner pentaplast

white paper

EYETRACKING STUDY REPORT: Clamshells vs Paperboard Boxes

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EXECUTIVE SUMMARY

Different packaging options can make an enormous difference to the bottom line, both through manufacturing costs and influencing a customer's point of sale decision. A study was conducted in the CUshop™, a recreation of a shopping environment, to examine the differences in how customers shop for products when they have the option for either a clamshell package or a printed paperboard box.

To accomplish this, 68 participants wore eyetracking glasses and shopped for several products. Three different products were present in both a clamshell and box variety (electric toothbrush, men's razor, and air freshener) and were placed amongst many other products in the CUshop. Participants selected which product they would purchase if they were shopping as they normally would with a provided shopping list. During this process, their eye movements were recorded at a rate of 30 times per second. These eye movements were used to corroborate the results and provide insights on why participants purchased the item they did.

Results indicated a strong purchase preference for clamshells over boxes, with more than 400% more purchases being received for clamshells. Eye movement metrics supported this result, with clamshells being looked at faster, more frequently, and for longer periods of time. Statistical evidence shows that there is a strong correlation between fixation duration and purchase decision, and thus longer fixations on clamshell packages show that they are a more attractive packaging option to consumers.

METHODOLOGY

Eyetracking

A pair of Tobii eyetracking glasses was utilized in this study. These glasses look similar to reading glasses and are attached to a recording assistant, which records eye movement data onto an SD card. These glasses record samples 30 times per second and are similar to typical, widely used eye trackers, with the exception that the Tobii glasses are a mobile eye tracker and allow the participant free movement in a realistic environment.

Participants and Demographics

68 participants (36 male, 32 female) took part in the study. Participants were recruited with a \$10 gift card incentive and were chosen to fit particular demographic criteria. Participants ages ranged from 18 to over 65.

57.4% of participants were single, with 38.2% married, and the remaining being either divorced (2.9%), separated (1.5%), or widowed (1.5%). Participants had a fairly diverse income distribution and 76.5% of participants claimed to be the primary shopper for their household.

Participant income varied with an even 50/50 split of participants below and above the US gross national income per capita of \$43,000. Educational levels also varied with most participants having completed a 4-year college degree.

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Experimental Design and Procedure

The experiment took the form of a simple shopping task. Participants were given one of five random shopping lists and instructed to go into the shop and select a product for each item on their shopping list. They were instructed not to pick up any products but only to write down the number corresponding to the item on their checklist.

Shoppers were asked to find a men's razor, electric toothbrush, and air freshener. There was only one type of each of these products available but it existed in both a clamshell and box form (positioned side by side). The experiment was carried out over two days with a similar number of participants on each day, and after the first day the order of the box types was swapped to eliminate any bias based upon positioning.

After selecting a product for each item on the shopping list and exiting the shop, participants were guided to a debriefing room where they answered a short post-experiment questionnaire that collected mainly demographic information.

PRODUCT PACKAGES TESTED



Men's razor clamshell and box



Electric toothbrush clamshell and box



Air freshener clamshell and box

RESULTS

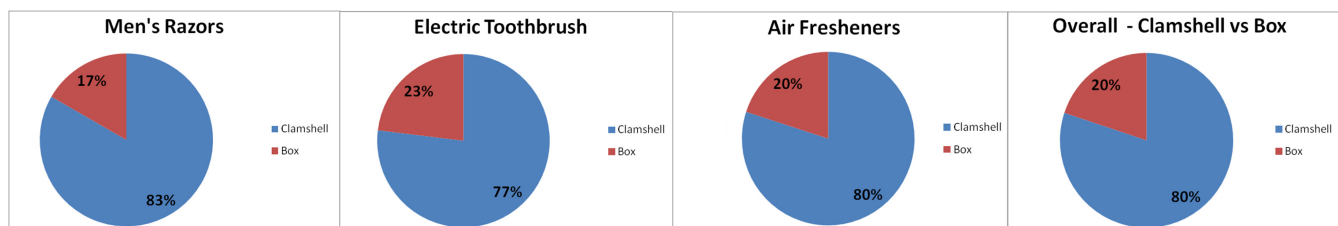
Metrics

We examined three primary metrics for this study in addition to qualitative measures recorded by the questionnaire. We define these metrics below:

- Purchase decisions (PD) - How many participants chose to buy the item
- Total fixation duration (TFD) - the time, in seconds, spent on average by participants fixating on this item
- Fixation count (FC) - the number of fixations undergone on average by participants on this item

Purchase Decision Results

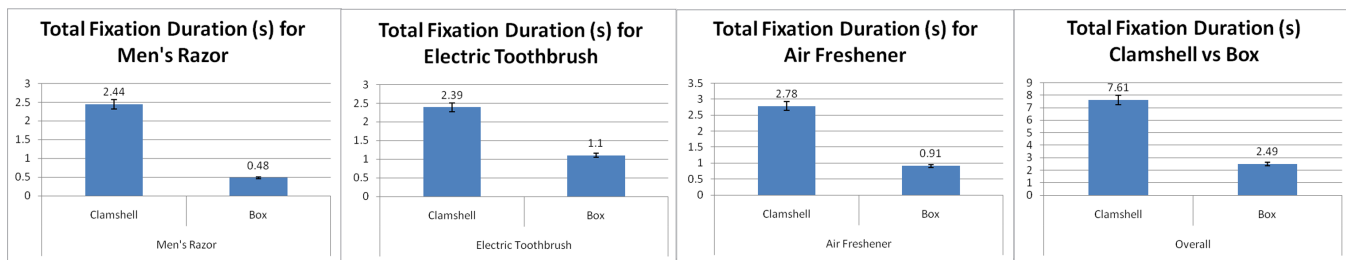
The pie charts below show the percentage selections for the two choices for each product type.



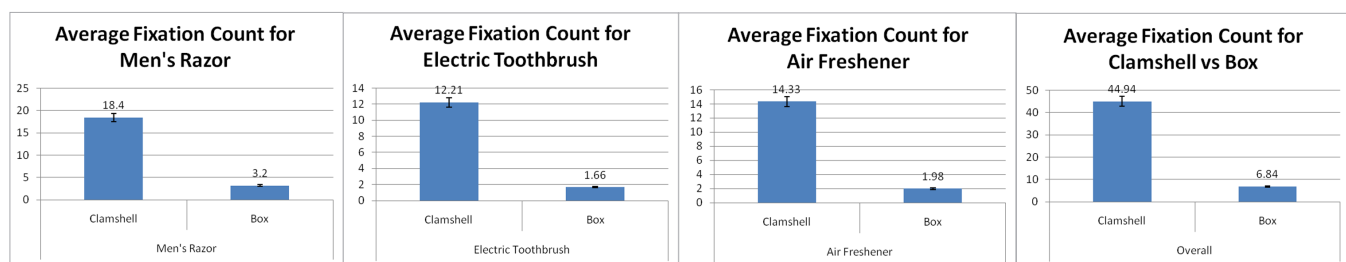
Purchase decision results show a strong preference for clamshell-type packages over the standard box. The preference of clamshell-type packages was highly significant and independent from product type. This shows that consumers tend to purchase the clamshell-type packages on average 402% more, regardless of what type of product is in the package.

Eye Movement Analysis

Fixation duration is typically one of the most important metrics for a consumer study. We found a strong correlation between product selection and fixation duration. That is, as a consumer's fixation duration increased, so did their chance of purchasing the item fixated. There was also a positive correlation between product selection and fixation count.

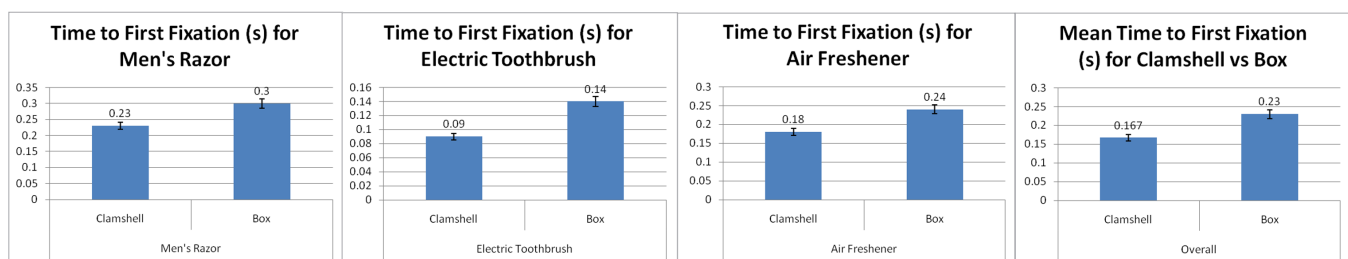


These plots show a significantly longer duration of fixations on clamshell-type packages overall, as well as within each product category. Participants spent more than 343% the amount of time looking at the clamshell packages than the traditional boxes.



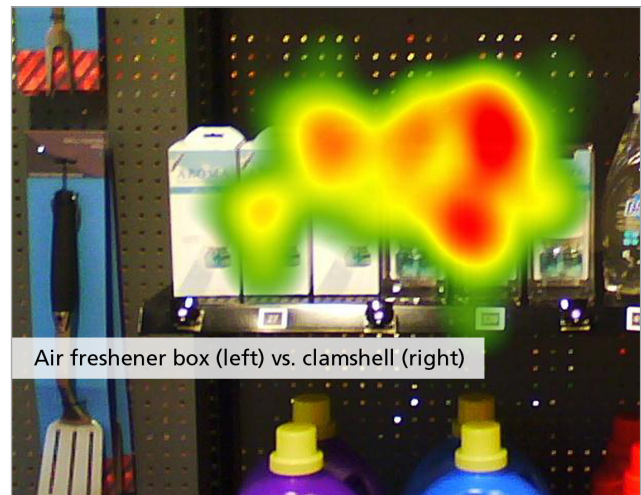
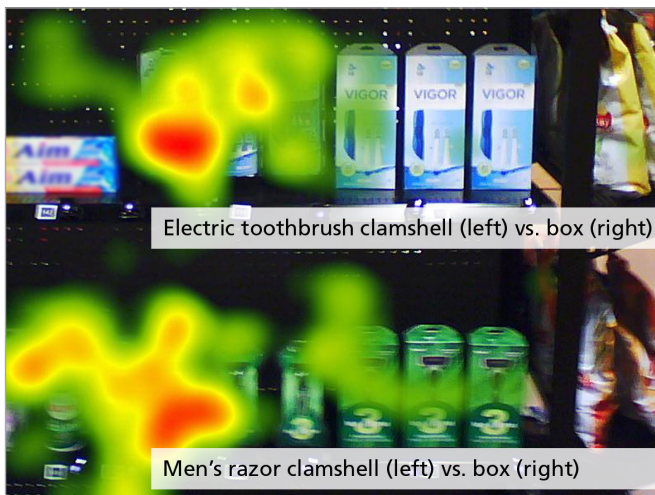
An enormous difference is found in number of fixations on clamshells vs boxes. Clamshell packages received an average of 675% times the number of fixations as traditional boxes.

The final eye movement metric, time to first fixation, is presented below. The clamshell packages were found on average 40% faster. Note that the 'overall' results are presented as an average, not the minimum time to first fixation among the products in each category.

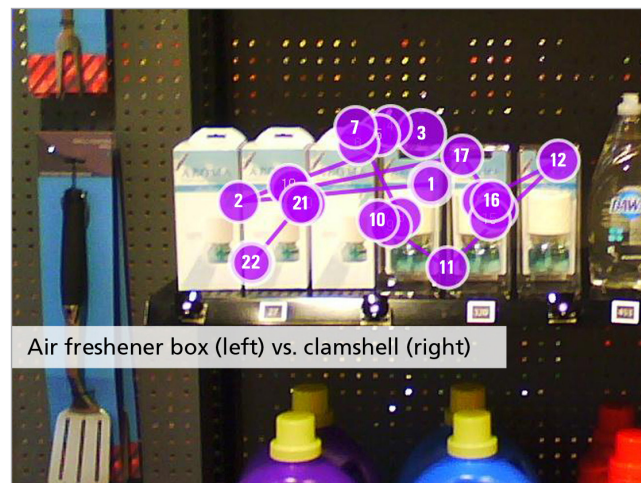
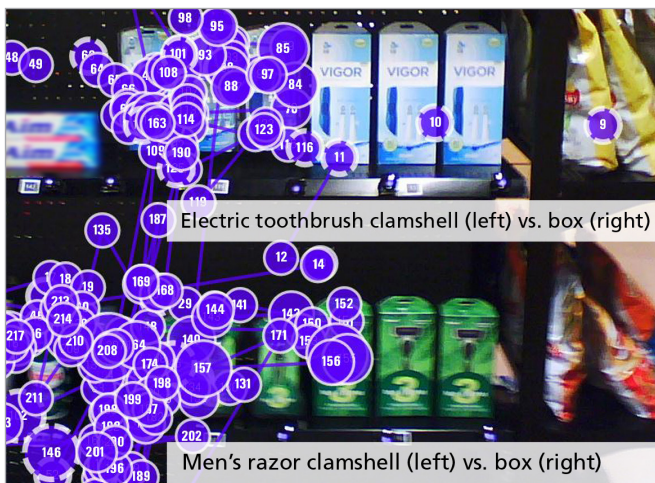


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Results of the eye tracking experiment can be visualized in aggregate via heatmaps. A heatmap shows where most participants looked by visualizing 'heat' in that area. The redder an area, the more fixations that area received relative to the surroundings. Heatmaps drawn from the entire participant pool are shown below.



In addition to aggregate visualization, individual patterns can be observed. Below is a representative scanpath of an individual showing the dominance of the clamshell-type razor and toothbrush. In this visualization, you can see the sequence of fixations by the number in the dots, and the diameter of the dot is proportional to the length of fixation (i.e., larger dots mean the participant fixated there for longer).



RELEVANT FINDINGS

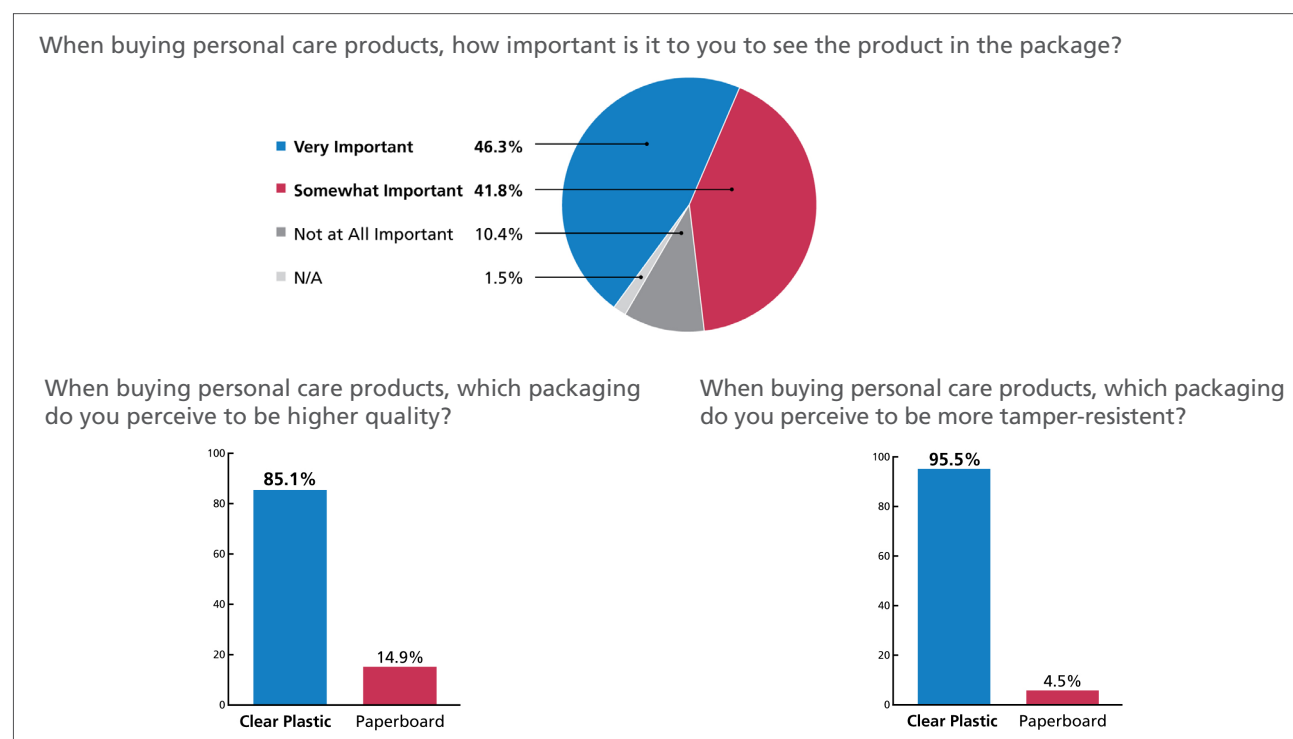
This experiment resulted in many findings. This section summarizes the 'take away' messages.

- Clamshell packages were fixated on for 343% longer than paperboard packages
- Clamshell packages received 675% more fixations than paperboard packages
- Clamshell packages were found 40% faster than paperboard packages
- Clamshell packages were purchased 402% more than paperboard packages, with some products seeing as much as 500% more sales in the clamshell package over the paperboard package.

Furthermore, statistical evidence backs these findings. We found a strong correlation between product sales and fixation duration, and evaluated all metrics statistically to find significance. Such large differences, such as a 343% longer fixation duration, are highly indicative of a substantially more visible, better selling product.

Following the in-store eyetracking study, participants completed an online survey. Results for several questions revealed the following perceptions of clear plastic packaging vs. paperboard box packaging:

- 88.1% agreed that it was very important to somewhat important to be able to see the product they were purchasing
- 85.1% perceived a product packaged in a clear plastic package to be a higher quality
- 95.5% believed a clear plastic package was more tamper-resistant



This data, when combined with the above relevant findings, makes for a compelling story of why clamshell packages are preferred over paperboard boxes.

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