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## **Exploring Kenyan mothers' attention and child food choice through eye tracking in a natural environment**

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### **Introduction**

The empowerment of women in poverty-stricken Northern Kenya is of great interest, to enhance their own and their families' nutritional status (Jones et al., 2019). It assists them in acquiring the resources and agency for their vital roles and functions in improving food security (Soharwardi et al., 2023). Production of nutritious and affordable child food using traditional recipes constitutes a promising income-generating activity. If carried out by local women's groups, it can enhance food security and overall nutrition within their communities. Nevertheless, inadequate packaging makes it difficult to have access to the formal market (Quaye & Mensah, 2019).

The primary aim of this study is to explore the key parameter driving attention and choice of local consumers buying child food products at the point of sale. Understanding these parameters could aid in the battle against malnutrition through helping to create packaging designs that align with consumer choices, the promotion of healthier food consumption among infants, and potentially boost the local economy by increasing the consumption of locally produced foods and helping to pave the way for these products to find their way into supermarkets, thus creating jobs and reducing poverty. Identifying the factors influencing consumer attention and purchasing decisions at the point of sale is a complex undertaking. To address this challenge, a top-down (goal-directed), qualitative eye-tracking (ET) study was conducted in a real supermarket in the city of Marsabit in northern Kenya. The aim was to explore the mechanisms of attention and choice.

### **Material and Methods**

The methodology of the study was based on the concept of "guerrilla testing," which originated in the field of user experience (UX). Four participants, all mothers from Marsabit, were provided with eye-tracking glasses and a budget of 1,000 Kenyan shillings (approximately 7.60 US dollars) to select and purchase one or more child food products of their preference while verbalising their thoughts. The gaze and voice data were recorded using Tobii eye-tracking glasses and analysed using Tobii software and QDA Miner. This included the number of fixations, voices, comments and the consumer's choice.

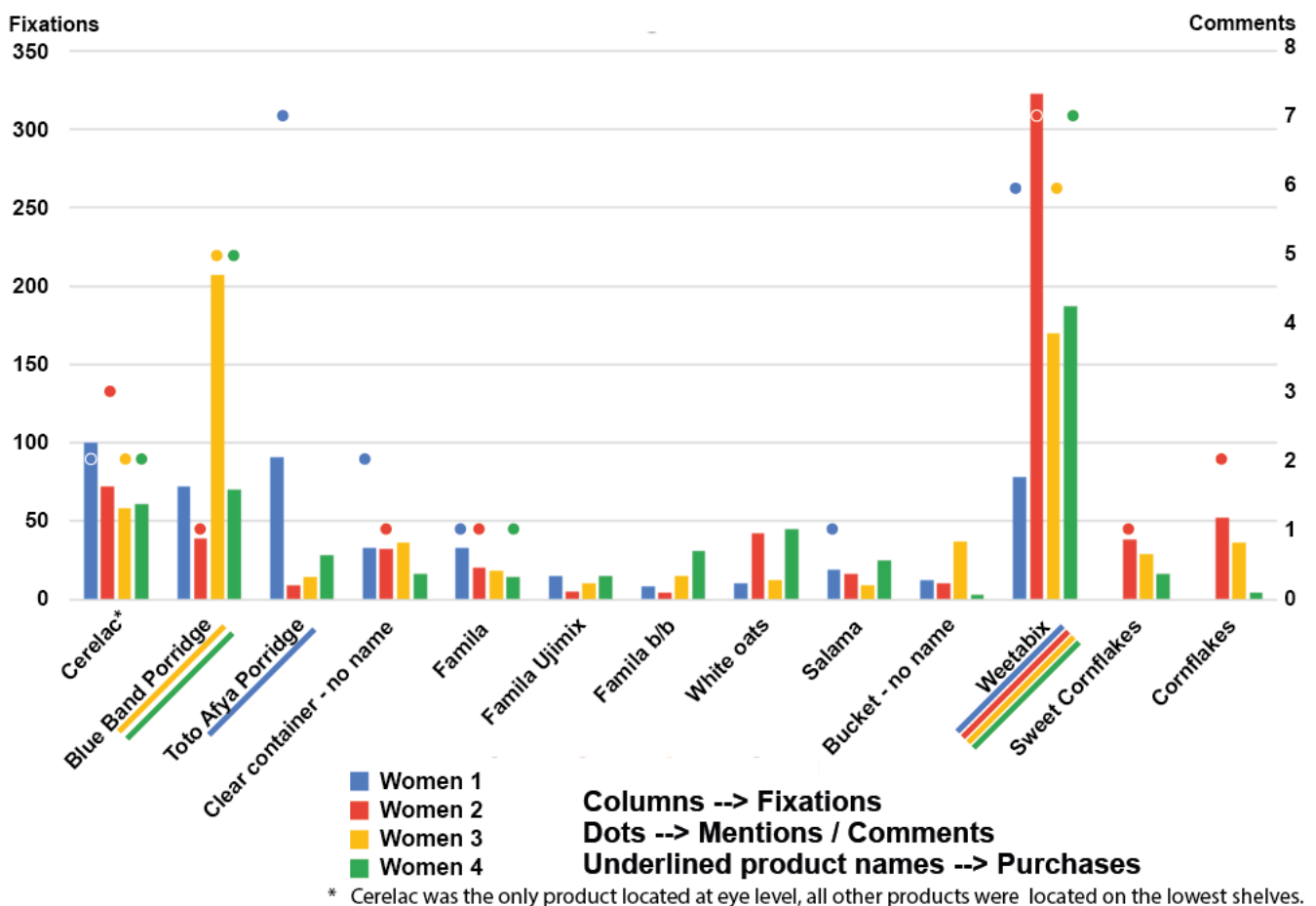
### **Results**

During the eye-tracking experiment, participants' verbal comments provided insight into their

thought processes while viewing infant food products. A total of four women participated, with each commenting on a varying number of products. The number of verbal mentions recorded for each participant was as follows: Woman 1 (W1) made 19 mentions, woman 2 (W2) made 16 mentions, woman 3 (W3) made 13 mentions, and woman 4 (W4) made 15 mentions. In terms of product diversity, W1 referred to six different products, W2 mentioned seven products, while W3 and W4 focused on fewer products, mentioning three and four products, respectively.

A total of 63 mentions and comments were recorded, addressing various product attributes. The most frequent comments were personal opinions, which were shared 21 times. Comments regarding the age group or target demographic (infants only vs. whole family) were made 14 times, followed by seven comments each about the price and the ingredients of the products. Participants also mentioned the taste of products five times, their nutritional values five times, and the packaging design three times. Convenience was mentioned only once.

A relationship was observed between the number of verbal mentions and the products that were ultimately purchased: W1 made seven and six mentions about the two products she later selected for purchase. Similarly, W2 made seven mentions specifically targeting the product she ended up choosing, W3 made five and six mentions about the two products she chose and W4 made five and seven mentions about the two products she selected for purchase. The association between the ‘frequency of mentions and comments’ and ‘product choice / purchases’ was found to be statistically significant ( $r_s = 0.71, p = 0.007$ ), indicating that products that were more frequently commented were also more likely chosen and purchased (refer to Figure 1).



**Figure 1: Participants’ fixations, mentions / comments and purchases**

The analysis of fixation counts revealed differences in visual attention across different packaging designs. Participants exhibited a higher number of fixations on products located at eye level, within

the middle shelves, compared to lower shelves. The average fixation count for the various flavours of Nestle Cerelac –the only infant food product placed on the middle shelves- was 74% higher ( $M = 73$ ,  $SD = 19$ ) compared to all other products who were positioned on the lower shelves ( $M = 42$ ,  $SD = 61$ ). On average, products that were mentioned had a higher fixation count ( $M = 77$ ,  $SD = 75$ ), compared to products that were not mentioned ( $M = 16$ ,  $SD = 12$ ).

Further analysis based on the participants' comments indicated that familiarity with the products played a substantial role in fixation behavior. Products that, according to the comments made, were known to the participants received a higher number of fixations ( $M = 86$ ,  $SD = 83$ ) compared to unfamiliar products ( $M = 21$ ,  $SD = 16$ ). The data revealed a statistically significant correlation between the number of fixations and the frequency of product mentions ( $r_s = 0.88$ ,  $p < 0.001$ ), suggesting that increased visual attention aligns with verbal engagement.

The analysis of fixation counts in relation to product purchases revealed a pattern: the more frequently participants fixated on a product, the greater the likelihood that they purchased it. This trend was consistent across all four participants. Products that were ultimately purchased received a higher number of fixations compared to those that were not selected. A statistically significant positive correlation was found between the number of fixations and product purchases ( $r_s = 0.70$ ,  $p = 0.008$ ), indicating that increased visual attention to a product was strongly associated with the likelihood of it being chosen for purchase.

The most frequently shared comments were personal opinions, highlighting the importance of individual preferences in guiding product choices. Products designed for specific age groups or demographics also garnered significant attention and respondents, reflecting participants' considerations about the target audience (infants vs. whole family). The repeated comments on price and ingredients indicate that these aspects were central to the participants' decision-making processes. Other product attributes, such as taste, nutritional values, packaging, and convenience, were mentioned less frequently but still contributed to shaping consumer perceptions.

## Discussion

The study found that participants showed more visual attention, on products placed at eye level, and on familiar products, which were also more frequently mentioned verbally. There was a strong correlation between fixation counts and product purchases, indicating that increased visual attention was associated with a higher likelihood of purchase. The integration of visual attention data and verbal comments provides an understanding of the factors influencing product selection. Participants' verbal engagement offers valuable context for their fixation behavior, indicating that factors such as personal preferences, product familiarity, age appropriateness, and specific attributes (e.g., price and ingredients) played a pivotal role in shaping both visual attention and purchasing decisions.

The results support the assumption that verbal engagement was associated with visual focus, as products receiving more mentions were also fixated on more frequently. This correlation suggests that familiarity with a product, combined with positive verbal reflections, increased the likelihood of purchase. Conversely, products that were unfamiliar or received fewer comments were not only viewed less but also had a lower chance of being bought. This pattern highlights the critical role of product familiarity in both visual and verbal engagement within the supermarket context.

The correlation between verbal mentions and fixation behavior, as well as the combined interpretation of both data sets, provides insights into the participants' decision-making process. The data reveal that certain products were briefly viewed but neither commented on nor purchased. These products failed to capture sufficient interest to elicit further engagement. In contrast, some products managed to attract more attention, evidenced by longer fixation times and verbal comments, although they were not purchased. This suggests that while these products sparked some initial interest, it was not strong enough to lead to a purchase decision.

In all cases, the products that were purchased were those that were familiar to the participants. These products likely benefited from prior positive experiences, meeting the participants' expectations in terms of quality and price. New products, on the other hand, face the challenge of competing with established options. According to Chikweche and Fletcher (2010) Zimbabwean subsistence consumers tend to avoid choosing unknown products, but rather buy the ones they know and trust, because they lack the financial means to replace a poorly performing one. The same reasons might apply to consumers in Marsabit, Kenya.

For new products entering the market, the very brief initial interest may represent the first crucial step in gaining consumer attention. However, products that were both minimally viewed and not mentioned had virtually no chance of being selected, indicating that they failed to engage participants at all. Breaking through this barrier might require strategies such as competitive pricing or targeted marketing campaigns. Without such efforts, unfamiliar products that fail to generate both visual attention and verbal engagement are unlikely to succeed in attracting consumer interest.

### **Conclusions and Outlook**

This study demonstrates the influence of visual attention, verbal mentions, personal preferences, product familiarity, and key attributes like price and ingredients on consumer decision-making. Products that received more verbal mentions and fixations were more likely to be purchased, while unfamiliar products struggled to capture interest. Brief attention alone was not enough to drive purchases, emphasizing the challenge for new products in competing with established options.

To overcome this familiarity barrier, strategies such as competitive pricing and targeted marketing are essential for attracting consumer interest. Future research should explore how marketing interventions and different consumer demographics impact both visual attention and product selection, offering further insights into effective strategies for new product introductions.

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