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Exploring the Impact of Visual Perception and Taste Experience on Consumers' Acceptance of Suboptimal Fresh Produce

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Abstract: Consumers' tendency to avoid purchasing cosmetically "suboptimal" fruits and vegetables has been widely recognized as a significant contributor to food waste. However, the mechanisms that shape and influence this tendency remain largely unknown. The current study evaluates the impact of visual perception and taste experience on willingness to purchase and quality perceptions of fresh produce, focusing on two types of suboptimality: small size and abnormal shape. The study employed a 3 × 2 between-subjects factorial design in which participants indicated their perceived quality and willingness to purchase suboptimal tomatoes and sweet peppers in three informational conditions: viewing the vegetable picture (no taste), view then taste (participants tasted a slice after viewing the vegetable picture), and taste then view. The results revealed that, as expected, the abnormally shaped vegetable was judged less favorably than the normal one. The small-sized vegetable was judged more favorably than the regular one, in contrast to the current size regulations applied by retailers. Tasting significantly increased people's willingness to purchase the abnormally shaped produce, but had no effect on the willingness to purchase the abnormally sized produce, nor did it impact the perceived quality of the abnormal products. This study highlights consumer bias towards aesthetic qualities and suggests that direct taste experiences can alter perceptions towards accepting visually imperfect produce, thereby contributing to sustainability and food-waste reduction efforts.

Keywords: suboptimal produce; abnormal shape; size; willingness to purchase; quality perception

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1. Introduction

According to the UN [1], "each year, an estimated 1/3 of all food produced—equivalent to 1.3 billion tons worth around $1 trillion—ends up rotting in the bins of consumers and retailers, or spoiling due to poor transportation and harvesting practices". Sustainable Development Goal (SDG) #12, which calls for responsible production and consumption, sets a target (12.3) for 2030 to halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses. Reducing food losses implies that less food needs to be produced, thus resulting in many environmental benefits [2,3]. An analysis by Cattaneo et al. [4] indicates that reducing food loss and waste improves resource-use efficiency for land and water and reduces the amount of greenhouse gases (GHG) emitted per unit of food consumed. It also contributes to achieving SDG#2, which aims to end hunger, achieve food security and improved nutrition for all, and promote sustainable agriculture. It is estimated that the amount of food losses in 2017 would have been enough to feed 940 million people worldwide [5].

In Europe, agriculture production and harvesting account for 20% of fruit and vegetable food losses, while retailing and consumption contribute about 10% and 13%, respectively [6]. However, retailers' contribution to food waste is not limited to stores and logistics centers. It also substantially impacts downstream food loss through fresh-produce quality requirements [7–9]. In fact, most of the waste of fruits and vegetables during the production phase stems from the need to meet quality standards [6,8,10,11]. Over a third of total farm production is lost due to aesthetic reasons, resulting in emissions of 22.5 Mt CO_2e annually in the European Economic Area [12,13]. Some of these fruits and vegetables are left unpicked in the field, while others are lost during the grading and packing process [14,15]. Cicatiello et al. [16] suggest that blemished fruits and vegetables are responsible for more than a third of total in-store food waste.

Product specifications, such as ripeness, shape, skin, color, and size of fruits and vegetables, are determined and enforced by marketing standards, thus setting the expected quality levels [8]. In the European Union, these standards extend to ten commonly consumed fruits and vegetables (e.g., apples, sweet peppers, tomatoes; Commission Implementing Regulation (EU) No. 543/2011, 2011). In addition to the standards set by regulators in each country, retailers often have their own cosmetic specifications [10,17–19]. Consequently, fruits and vegetables that do not meet the standards are considered "suboptimal" and are frequently removed from the supply chain [20,21]. As a result, consumers, unaware of the grading and sorting processes occurring behind the scenes, encounter only homogenous and aesthetically pleasing fresh produce [22]. At the same time, retailers assume that consumers would avoid buying suboptimal food and use this argument to justify not placing abnormal foods on the shelves [10,19,23–25]. However, to the best of our knowledge, the underlying assumption that consumers' perceptions of imperfect food align with retailers' decisions has not been investigated. Thus, the first aim of this research is to assess whether consumers' perceptions correspond with the retailers' standards regarding what constitutes suboptimal produce. Hence, we hypothesized that:

H1. *Participants' perception of abnormality aligns with retail standards, such that fresh produce considered suboptimal by retailers is also perceived as suboptimal by participants.*

Suboptimal produce differs from a normal/optimal one based on appearance [26]. Previous studies of suboptimal fresh produce have primarily focused on consumers' perception of shape abnormalities [27–30] and various types of mechanical damage to the produce skin [31–34]. To the best of our knowledge, only one study explored consumer responses to suboptimal size. This study found that size was the least important attribute compared to visual imperfections, washed/unwashed, and locally produced origin in consumers' preferences for potatoes [35].

Visual attributes, such as size, shape, color, absence of defects, and firmness, collectively contribute to the sensory experience, thereby influencing the perceived quality of fresh produce [36]. In other words, appearance serves as a major cue in consumers' assessment of fresh-produce quality [37]. Moreover, perceived inferior quality and unappealing appearance have been linked to reduced intention to purchase suboptimal food [38]. While extrinsic visual characteristics of food, such as size, shape, and color, may not indicate its intrinsic quality, such as taste and nutritional value, they nonetheless influence consumer purchasing decisions [32,36,39]. Specifically, the Expectation–Disconfirmation Theory (EDT) [40,41] explains how consumers form satisfaction judgments. According to EDT, consumer satisfaction depends on initial expectations, perceived performance, and the discrepancy between them. If consumers expect fresh produce to look aesthetically pleasing, they may associate visual attractiveness with quality and freshness. Consequently, encountering suboptimal fresh produce may lead consumers to perceive it as inferior in quality compared to their initial expectations.

Accordingly, we hypothesized that:

H2. *Participants are more willing to purchase optimal vegetables than suboptimal ones;*

H3. *Participants perceive the quality of optimal vegetables to be higher than that of suboptimal ones;*

H4. *Participants are less willing to taste the suboptimal vegetables than the optimal ones.*

Previous research suggests that direct experience with a product can complement visual features in forming consumer preferences. For example, Makhal et al. [42] showed that acceptance of suboptimal produce tends to increase with repeated exposure and familiarity with suboptimal produce. Additionally, Hingston and Noseworthy [29] found that consumers who grow or pick their own fruits and vegetables show less bias toward their appearance. In a similar vein, Harker et al. [43] found that fruit preferences are determined not only by texture but also by flavor. Likewise, Lange et al. [44] showed that willingness to pay and perceived quality are higher among consumers who had a tasting experience with a product, such as orange juice. Accordingly, Wong et al. [45] found that self-reports of sensory appeal (e.g., "suboptimal food looks nice") are positively correlated with purchase intentions of suboptimal food. In line with those findings, scholars have argued that consumers should be encouraged to use their sensory skills to assess food freshness and to rediscover produce with suboptimal appearance [46,47]. This assertion is also in line with the EDT, as a positive experience with suboptimal produce may lead to a positive experience that influences satisfaction with the suboptimal fruit or vegetable in the future.

Only a few studies have explored the influence of direct tasting experience on preferences for suboptimal produce, and their findings have been inconclusive [34,48]. Symmank et al. [48] found that a positive taste experience increases intentions to purchase bananas with brown spots, while Normann et al. [34] found no significant differences in flavor and texture attributes between optimal and suboptimal apples. Therefore, another aim of this research is to juxtapose two sensory channels, namely appearance and taste, and examine whether a tasting experience affects consumers' perceptions of shape and size abnormality. In simpler terms, we examine whether a taste experience alters the perception of suboptimal products. Based on the rationale outlined above, we hypothesize:

H5. *Participants who taste suboptimal vegetables exhibit a greater willingness to purchase them compared to participants who only observe them;*

H6. *Participants who taste suboptimal vegetables perceive them as higher quality compared to those who only observe them.*

To test our hypotheses, we used two types of fresh products: tomatoes and sweet peppers. These products were chosen because they are not seasonal and are ranked among the five most consumed vegetables in Israeli households [49]. Israeli retailers, like those elsewhere, define suboptimality standards for tomatoes and sweet peppers based on factors such as shape and size. In this research, we focused on shape suboptimality for tomatoes and size optimality for sweet peppers. Figure 1 provides a summary of the study hypotheses.

Understanding the motivations behind consumers' decisions to purchase and consume imperfect produce presents a promising approach to combating food waste, with potential benefits spanning various levels of the food supply chain [50]. However, the specific factors influencing the choice to purchase or avoid "ugly" products remain somewhat unclear [51]. Notably, it is uncertain under what circumstances consumers prefer suboptimal food over its optimal or normal counterpart, and whether certain types of abnormalities are less concerning to consumers. This study makes three distinct contributions. First, we investigate the consistency of perceptions of suboptimality among supply-chain actors and consumers. Second, we explore how tasting experiences impact consumers' willingness to purchase and their perceptions of the quality of suboptimal produce. Third, we examine

the role of size abnormalities. Despite produce size being a significant indicator of quality, consumer perceptions regarding this aspect have yet to be explored. The experiment, outlined in the following section, was designed to address these objectives.

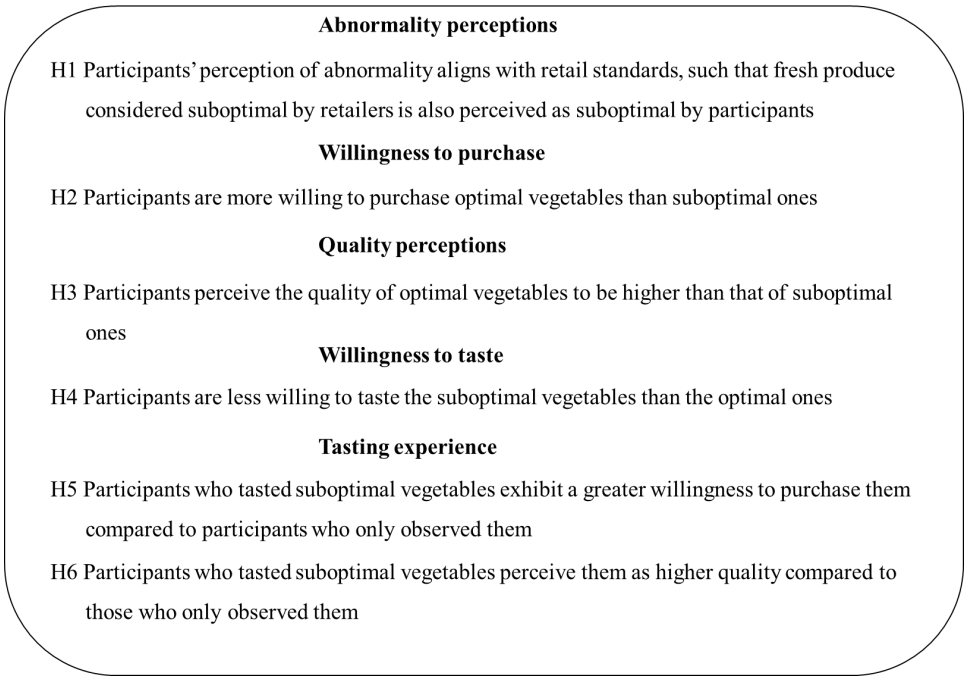


Figure 1. Study hypotheses.

2. Material and Methods

2.1. Participants and Experimental Design

One hundred and seventy students participated in the study. One hundred students were from the Hebrew University of Jerusalem, and 70 were from Reichman University in Herzliya (71% females, M_{age} = 24.8, SD_{age} = 4.11). Most participants (87%) were responsible for at least one food chore in their household, such as food purchasing, food cooking, or making a shopping list. Most participants reported liking the target vegetables of the study ($M_{tomatoes}$ = 4.38, SD = 0.89 and $M_{sweet\ peppers}$ = 3.93, SD = 1.1, both measured on a 5-point Likert scale, ranging from "1"—'Not at all,' to "5"—'Extremely'). Participants received 20 NIS (~5.3 €) for their participation and gave their informed consent before participating in the study, which was approved by the Ethics Committees of both institutes.

Participants were asked to taste and rate sweet pepper and tomato under a 3 × 2 between-subjects factorial design. Thus, two levels of optimality (optimal vs. suboptimal) were combined with three levels of sensing channels (no taste, taste then view, and view then taste). Each participant evaluated both vegetable types (tomato and sweet pepper), and their order was counterbalanced.

In the no-taste condition (n = 54), participants saw on the computer screen a picture presenting a mix of optimal and suboptimal tomatoes or sweet peppers (see Figure 2). In the taste-then-view condition (n = 58), participants were asked to taste the vegetable, and only then viewed its picture. Finally, in the view-then-taste condition (n = 58), participants first saw the picture and only then were asked to taste it. The taste experience was conducted such that participants were served with a slice of approximately 2 × 2 cm of each vegetable and were told that it was cut from the vegetable in the picture. Participants were randomly assigned to each condition.

In all conditions, following either viewing or tasting the vegetable (depending on the experimental condition), participants indicated their willingness to purchase the vegetable, rated its perceived quality, and judged its degree of abnormality. Participants in the view-then-taste condition were asked to indicate their willingness to taste the vegetable

immediately after viewing it, after which slices of that vegetable were served for tasting. All answers were measured on a 5-point Likert scale, where '1' denoted the lowest score and '5' denoted the highest score. The survey questions and variable construction are presented in Appendix A.

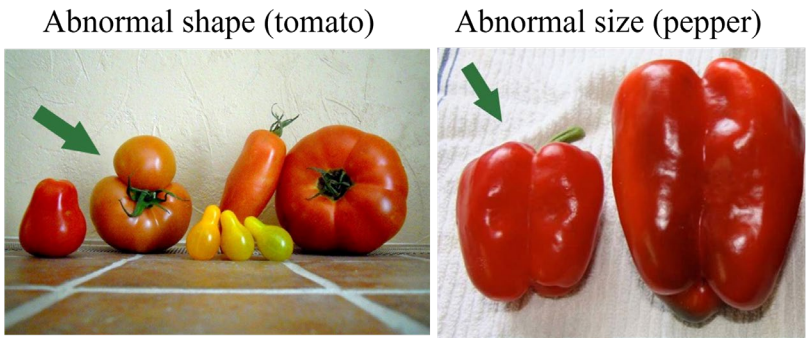


Figure 2. Stimuli presented during each trial. The order of trials (vegetable type) was counterbalanced across participants. The green arrow indicates the vegetable to which the participant was asked to refer, depending on the experimental condition.

2.2. Procedure

Students who responded to posts around campus inviting them to participate in a study on fresh produce participated in the experiment. They were seated in the lab in front of a personal computer, where they were shown images displaying a mixture of optimal and suboptimal vegetables. The target vegetable to which participants were asked to evaluate was marked on the screen, depending on their experimental condition (Figure 2). For example, participants assigned to the suboptimal condition had a green arrow pointing at the abnormal-shaped tomato and the small sweet pepper. The same vegetable was served to participants in all six conditions. All participants completed the study and the questionnaire in the lab. Sessions included one participant at a time. Analyses included two-way ANOVAs and independent-sample *t*-tests using SPSS 25.

3. Results

3.1. Abnormality Perceptions

For the tomato, an independent sample *t*-test revealed that the shape of the suboptimal tomato was perceived as more abnormal (M = 3.99, SD = 0.97) than the shape of the "normal" tomato (M = 2.32, SD = 1.03) (t(168) = 10.88, $p < 0.0001$).

For the sweet pepper, contrary to our expectation (and to the Israeli retailers' standards), the size of the optimal sweet pepper (M = 3.01, SD = 1.05) was perceived as more abnormal than the size of the suboptimal (small) sweet pepper (M = 2.44, SD = 0.95) (t(168) = 3.71, $p < 0.0001$).

This pattern of results partially supports H1 and shows that the perception of retailers and consumers align in terms of shape but not in terms of size, at least for sweet peppers. To adhere to the participants' perceptions, in the remaining analyses, we treated the small sweet pepper as optimal and the large one as suboptimal.

3.2. Willingness to Purchase

For the tomato, a two-way ANOVA, with optimality (optimal/suboptimal) and taste experience (no taste/taste then view/view then taste) as independent variables and willingness to purchase as the dependent variable, revealed a main effect for optimality (F(1,164) = 117.52, $p < 0.0001$), supporting H2 that people are less willing to purchase suboptimal vegetables than optimal ones. The analysis also revealed a main effect for experience (F(2,164) = 5.11, $p = 0.007$), as well as a significant interaction between the two factors (F(2,164) = 3.87, $p = 0.023$). These results are summarized in Figure 3 (left-hand panel). Planned contrasts further revealed that willingness to purchase suboptimal tomatoes was higher among par-

ticipants who tasted them, compared to the no-taste groups (M = 2.6, SD = 1.5 vs. M = 3.3, SD = 1.4, in accordance; $p < 0.0001$), supporting H5. However, no difference was found between the view-then-taste and taste-then-view conditions ($p = 0.279$), indicating that the timing of the taste experience had no effect.

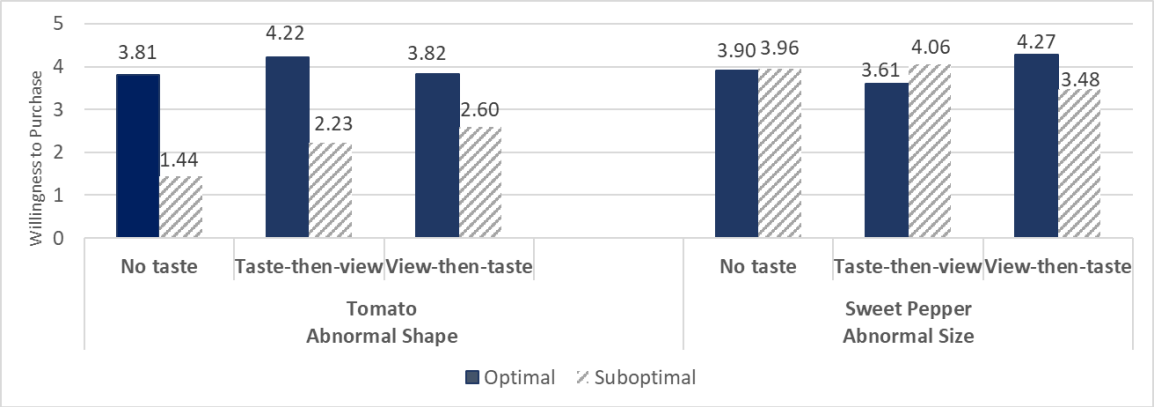


Figure 3. Mean willingness to purchase suboptimal and optimal vegetables in each of the experimental conditions.

For the sweet pepper, a two-way ANOVA, with optimality (optimal/suboptimal) and taste experience (no taste/taste then view/view then taste) as independent variables and willingness to purchase as the dependent variable, revealed no main effect for optimality ($F(1,164) = 0.289$, n.s) or taste experience (M = 3.9, SD = 1.1 and M = 3.9, SD = 1.2 for the taste and no-taste experience, respectively; $F(2,164) = 0.097$, n.s). This pattern of results does not support H2 and H5. However, a significant interaction between the two factors was observed ($F(2,164) = 4.35$, $p = 0.014$). Post hoc analyses further revealed a significant difference between the taste-then-view and view-then-taste groups ($p = 0.024$) for optimal (small) sweet pepper and a marginally significant difference between these groups for the suboptimal produce ($p = 0.082$). Thus, it seems that the willingness to purchase a suboptimal sweet pepper increased only when people tasted it before seeing it. These results are summarized in Figure 3 (right-hand panel).

3.3. Quality Perception

Perceived quality was measured as the mean score of five variables—taste, nutritional quality, level of hygiene, naturality, and overall quality (Cronbach's $\alpha = 0.75$ for both sweet pepper and tomato; see Appendix A for the survey questions and construction of variables).

For the tomato, a two-way ANOVA, with optimality (optimal/suboptimal) and taste experience (no taste/taste then view/view then taste) as independent variables and perceived quality as the dependent variable, revealed a main effect for optimality ($F(1,164) = 11.82$, $p = 0.001$). Specifically, suboptimal tomatoes were perceived as having lower quality than optimal ones, supporting H3. The analysis revealed no main effect of taste experience on perceived quality (M = 3.3, SD = 0.7 and M = 3.4, SD = 0.6 for the taste and no taste experience, respectively; $F(2,164) = 0.35$, n.s), nor a significant optimality and experience interaction ($F(2,164) = 1.24$, n.s), not supporting H6 for tomatoes. These results are summarized in Figure 4 (left-hand panel).

For the sweet pepper, a two-way ANOVA, with optimality (optimal/suboptimal) and taste experience (no taste/taste then view/view then taste) as independent variables and perceived quality as the dependent variable, revealed no main effect for optimality ($F(1,164) = 0.94$, n.s) or taste experience (M = 3.7, SD = 0.5 and M = 3.7, SD = 0.6 for the taste and no taste experience, respectively; $F(2,164) = 0.622$, n.s). In addition, no interaction was detected between the two factors ($F(2,164) = 1.90$, n.s; see the right-hand panel in Figure 4). These results do not support H3 and H6 for sweet peppers.

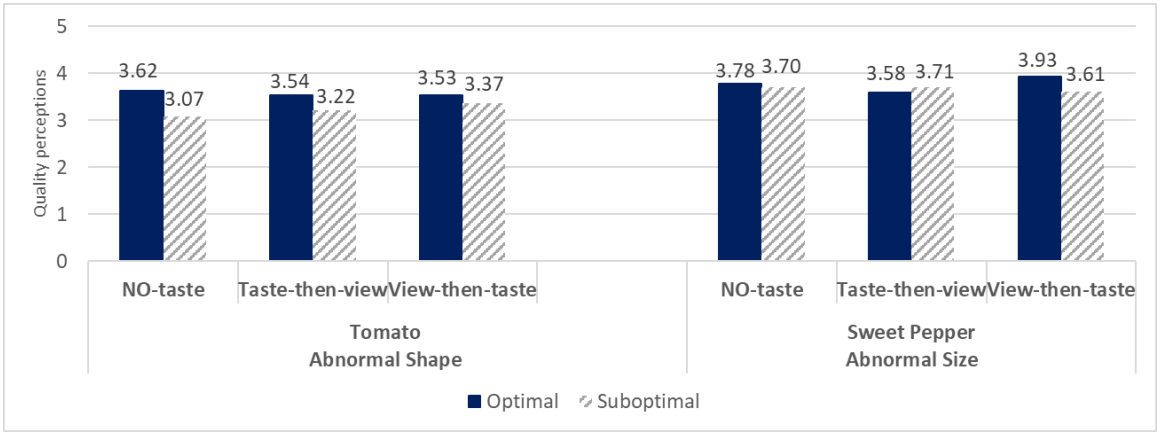


Figure 4. Mean quality perception of suboptimal and optimal vegetables in each of the experimental conditions.

3.4. Willingness to Taste

For the tomato, an independent-samples *t*-test revealed that participants were more willing to taste an optimal (M = 3.82, SD = 1.02) than a suboptimal (M = 2.87, SD = 1.36) tomato (t(56) = 3.01, $p = 0.004$; see left panel in Figure 5), supporting H4 for tomatoes.

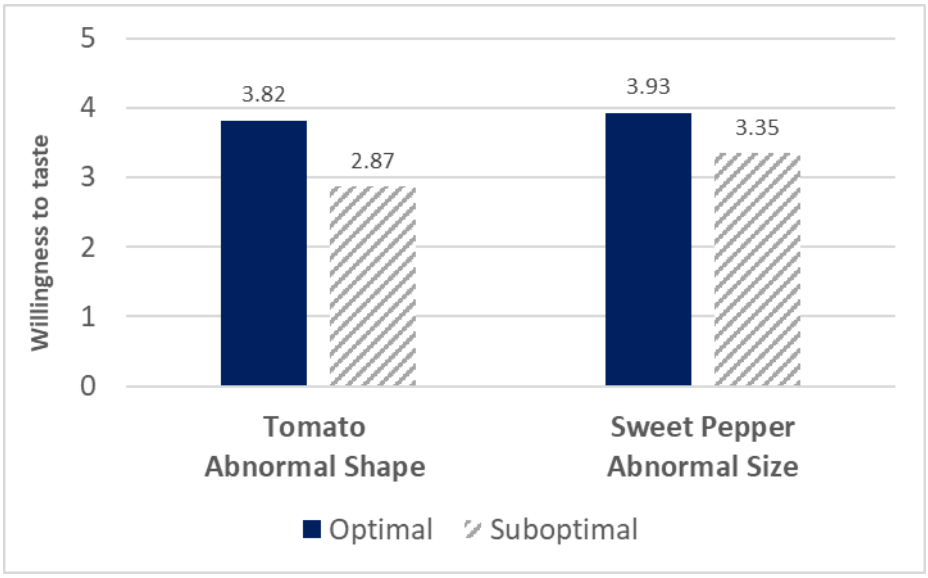


Figure 5. Mean willingness to taste suboptimal and optimal vegetables, in the 'View-then-Taste' condition.

For the sweet pepper, an independent-samples *t*-test showed that participants were more willing to taste an optimal (M = 3.93, SD = 0.75) than a suboptimal (M = 3.35, SD = 1.11) sweet pepper (t(50) = 2.25, $p = 0.029$; see the right-hand panel in Figure 5), thus supporting H4 for sweet peppers.

Overall, the research hypotheses were partially supported, as summarized in Table 1.

Table 1. Summary of the research hypotheses and the results.

	Hypotheses Description	Dependent Variable	Hypotheses Support
H1	Participants' perception of abnormality aligns with retail standards, such that fresh produce considered suboptimal by retailers is also perceived as suboptimal by participants	Abnormality perceptions	Tomato [1]—Supported
			Sweet pepper [2]—Not supported
H2	Participants are more willing to purchase optimal vegetables than suboptimal ones	Willingness to purchase	Tomato—Supported
			Sweet pepper—Not supported

Table 1. *Cont.*

	Hypotheses Description	Dependent Variable	Hypotheses Support
H3	Participants perceive the quality of optimal vegetables to be higher than that of suboptimal ones	Quality perceptions	Tomato—Supported
			Sweet pepper—Not supported
H4	Participants are less willing to taste the suboptimal vegetables than the optimal ones	Willingness to taste	Tomato—Supported
			Sweet pepper—Supported
H5	Participants who tasted suboptimal vegetables exhibited a greater willingness to purchase them compared to participants who only observed them	Willingness to purchase × Tasting	Tomato—Supported
			Sweet pepper—Not supported
H6	Participants who tasted suboptimal vegetables perceived them as higher quality compared to those who only observed them	Quality Perceptions × Tasting	Tomato—Not supported
			Sweet pepper—Not supported

[1] Tomato—shape abnormality. [2] Sweet pepper—size abnormality.

4. Discussion

Estimates of food waste stemming from fresh produce discarded due to cosmetic imperfections, such as irregular shapes that do not meet retailers' standards, are staggering, amounting to about 33% [12,13]. Therefore, understanding how consumers are affected by such imperfections is crucial for developing coherent policies. The theoretical and practical importance of this question has drawn researchers' attention to investigating the effects of visual abnormalities on consumers' reactions to fresh produce. However, our understanding of the relationship between the retailers' standards and consumers' perceptions, as well as the mechanisms that are influencing consumers' reactions to suboptimal food, is still lacking.

The current study focused on three main questions: first, do consumers' perceptions of suboptimal produce align with those of retailers; second, could a direct tasting experience increase the perception of the quality of suboptimal produce and encourage consumers to purchase it; and third, are people impacted by size abnormality, considering that retailers place significant emphasis on size standards as a quality indicator. To answer these questions, we designed a laboratory experiment involving consumers examining suboptimal vegetables in terms of shape and size.

In terms of shape, our findings indicate a clear preference for the normal-shaped vegetable. Consumers unequivocally preferred the produce that was not visually impaired. However, the taste experience increased consumers' willingness to purchase abnormally shaped produce. That is, consumers who tasted an abnormally shaped tomato were more likely to buy it. This finding aligns with the positive effect of tasting brown spotted bananas [48] and suggests that even a short, direct experience taking place at the grocery store (e.g., via supermarket food-tasting counters) may have a positive effect on the willingness to purchase suboptimal vegetables. Interestingly, the taste experience did not have a significant effect on quality perception. A potential explanation for this finding could be that tasting may have facilitated a positive experience regardless of quality perception. This finding suggests that taste experience before people form a preference based on appearance (like in our taste-then-view condition), corrects consumers' biased expectations regarding production intrinsic quality. It also corresponds with Mookerjee et al. [13] and Xiao et al.'s [52] conclusion that labels and signs can emphasize the produce's internal quality and suggest that visually suboptimal produce posted with the message "don't judge a book by its cover," may highlight that there are no meaningful differences between optimal and suboptimal produce. Future studies should further explore this direction. Moreover, our findings support the EDT [40] by showing that providing a positive (taste) experience before forming negative perceptions based on appearance can increase appeal. This highlights the importance of understanding the dynamics of expectations and actual experience to guide strategies to alter consumer expectations and perceptions. Such strategies can include educational campaigns informing consumers about the lack of correlation between visual imperfections and nutritional value and direct marketing efforts that highlight the en-

vironmental and ethical benefits of purchasing visually suboptimal produce, emphasizing values beyond aesthetics.

The findings regarding the abnormal-sized produce are less conclusive. Contrary to our initial assumptions, which were based on the standards of a major retailer in Israel, participants perceived the small sweet pepper as more natural and less abnormal than the regular-sized sweet pepper. Furthermore, no significant differences were found in the quality perceptions or the willingness to purchase the suboptimal compared to regular produce, and the tasting experience also had no effect.

The finding regarding consumer size perceptions challenges common quality standards, particularly those in Israel, where small produce, such as any sweet pepper with a diameter of less than 5.5 cm, is disqualified for marketing in retailers' chains. This pattern of results suggests that size might play a lesser role in creating expectations for quality in fresh produce. However, it is plausible that using only pictures may have hindered consumers' ability to appreciate size, especially since the picture provided lacked an actual size index. While it was clear that the vegetable we served was the smaller one, it could be argued that participants did not perceive it as objectively small. This point warrants further examination in future research.

Interestingly, the question of whether retailers' beliefs of consumers' perceptions align with the consumers' actual perceptions has been overlooked by previous studies. Our results suggest that investigating this alignment could be an intriguing direction for future research. Moreover, our results suggest that the size of produce may have a smaller impact on people's preferences and consumption decisions compared to its shape. This relationship should also be further examined in future research.

The current study has both theoretical and practical implications. From a theoretical view, understanding the dynamics behind the acceptance or rejection of visually suboptimal produce can provide insights into how aesthetic perceptions influence purchasing decisions, extending beyond traditional quality indicators like taste or freshness. Moreover, it reveals the underlying biases of appearance and quality perception and allows for a deeper understanding of how consumers value aesthetic attributes versus nutritional and taste factors. Finally, the study of consumer attitudes towards visually suboptimal produce touches on broader themes of environmental sustainability and ethical consumption. It probes into consumer willingness to compromise on aesthetics for the sake of reducing food waste and the environmental footprint, offering a lens to examine ethical consumer behaviors.

From a practical standpoint, encouraging the consumption of less-than-perfect produce can significantly reduce food waste. This shift not only addresses environmental concerns but also contributes to food security by making more food available in the supply chain. Promoting the acceptance of visually suboptimal produce can also play a role in enhancing health and nutrition awareness. By focusing on the intrinsic value and nutritional content of these products, consumers can make healthier food choices. Finally, the theoretical insights can inform practical approaches and vice versa, leading to policy changes and new industry standards that support the marketing and distribution of visually suboptimal produce.

Understanding what factors shape preferences is important because changing consumers' perceptions of suboptimal produce may increase sustainability by motivating retailers and policymakers alike to ease quality standards. Our results highlight that there is no unified standard for what is considered a suboptimal vegetable and that different features may play an important role in people's perceptions, depending on the produce. Thus, it is important to further explore consumers' responses to all types of fruits and vegetables to better design policies to reduce food loss and waste, thereby lowering its associated environmental externalities [4] and increasing food security and sustainability [5].

One limitation of our research is that it relies on a relatively homogeneous sample. While this focus allows for better experimental control and increases internal validity, conclusions drawn from students to other consumer segments (e.g., elderly people), should be taken with care. Generalizing findings to another segment is an empirical question

that warrants further investigation. Another limitation is that, due to a programming error, we only collected data on participants' willingness to taste the produce from the view-then-taste condition.

Our finding that consumers favor the smaller sweet pepper may indicate a disconnection between consumers' size preferences and current retailers' standards. Therefore, studying how consumers react to different sizes of various produce types is worthy of further study. In the current study, we use only a picture to illustrate the actual size of the sweet pepper. Hence, it is worth checking whether the inclusion of an illustrative tool, such as a yardstick, would affect consumers' size perception and preferences. Furthermore, since participants only viewed a picture of the produce, it would be interesting to explore how the presentation of the actual vegetable affects their experience. Additionally, comparing taste expectations with the actual sensory experience also presents an interesting course of future research.

Interestingly, consumers' willingness to purchase increased regardless of any change in quality perception, suggesting that experience may operate in more complex ways than merely altering attitudes and perceptions. This observation merits further investigation. Future research should also explore actual consumer behaviors toward suboptimal produce in real-world settings, such as open markets and supermarkets. Another intriguing real-world setting is online supermarket shopping, where tasting experiences are not typically provided. Our view-only condition could serve as a starting point for investigating consumer reactions and preferences toward suboptimal produce in such environments.

5. Conclusions

The current study shows that consumers' willingness to buy abnormally shaped vegetables is facilitated by a brief sensory tasting experience. Furthermore, it reveals the discrepancy between consumers' perceptions of optimal vegetable size and retailers' guidelines. These findings underscore the complexity of consumer preferences regarding suboptimal produce and challenge existing retailers' standards regarding produce size and shape, indicating that consumers may not share the same biases. By emphasizing the potential of taste experiences to shape consumer behavior towards suboptimal produce, the research suggests that considerations of consumers' preferences, expectations, and experiences must be taken into account in efforts to reduce food waste. Moreover, it suggests practical simple applications, such as implementing tasting counters in supermarkets to encourage consumers to sample imperfect produce or launching targeted campaigns to educate consumers that "size (and even shape) doesn't matter". These measures have the potential to reduce food waste and promote sustainability.

Author Contributions: E.E. (Efrat Elimelech) was responsible for conceptualization, investigation, methodology design, and writing the original draft. G.H. was responsible for conceptualization, methodology design, and formal analysis, as well as writing. E.E. (Eyal Ert) was responsible for conceptualization, design of methodology, and formal analysis, as well as writing. Y.P. was responsible for conceptualization as well as providing commentary and revision. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement: The studies were conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of the Baruch Ivcher School of Psychology at Reichman University for studies involving humans and the Institutional Review Board at the Hebrew University in Jerusalem.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the studies.

Data Availability Statement: The complete research data is available upon demand. Requests can be made to the corresponding author.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Table A1. Survey questions and construction of variables.

Variable	Items
Willingness to taste	1. How likely you are to taste the tomato/sweet pepper shown in the picture? (‘1’—Extremely unlikely’—‘5’—Extremely likely’)
Willingness to purchase [1]	2. How likely are you to purchase this tomato/sweet-pepper during your next visit to the grocery store? (‘1’—‘I would never buy this produce’ to ‘5’—‘I would definitely buy this produce’)
Quality perception [2,3]	1. How tasty do you think the sweet pepper/tomato is? (‘1’—‘very untasteful—very tasteful) 2. In your opinion, the nutritional quality of the sweet pepper/tomato is (‘1’—‘very low—‘5’—‘very high’) 3. In your opinion the level of hygiene (i.e., maintaining proper sanitary conditions during growing, storing and marketing phases) of the sweet pepper/tomato is (‘1’—‘very low—‘5’—‘very high’) 4. What is the overall quality of the sweet pepper/tomato, in your opinion? (‘1’—‘very poor quality’—‘5’—‘very high quality’) 5. How natural the sweet pepper/tomato looks to you? (‘1’—‘very unnatural’—‘5’—‘very natural’)
Abnormality perception	3. To what extent do you perceive the tomato shape as abnormal? (‘1’—‘Not at all abnormal’ to ‘5’—‘Extremely abnormal’) 4. To what extent do you perceive the sweet-pepper size as abnormal? (‘1’—‘very usual’ to ‘5’—‘very unusual’)

[1] Adapted from [23]. [2] Inspired by [53]. [3] The quality indicator was calculated as the mean score of these five statements; Cronbach’s $\alpha = 0.75$ for both sweet pepper and tomato.

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