How Functionality and Nostalgia Affect Product Desirability Among U.S. High School Students

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The present study aimed to test how nostalgia affects a product's desirability among Gen Z in conjunction with other relevant factors (i.e., product functionality, product type, and participant gender). 82 high school students in the Northeastern United States (M_{age} = 16.75, SD_{age} = 1.33) rated the desirability of sixteen tech or food products spanning four categories (speakers, cameras, soda, mayonnaise). Within each category, pictures and descriptions varied products' nostalgia and functionality levels (low, high). In all, a linear mixed effects regression model predicting product desirability from interactions between nostalgia, functionality, type (tech, food), and participant gender was tested. Regarding nostalgia, both women and men, but especially men, preferred nostalgic food products. However, nostalgia did not affect men's preference for tech products. Functionality mattered more for tech than food products, but regardless of product type, men cared more than women about functionality. In a follow-up exploratory analysis, older participants—but not younger participants—preferred nostalgic products. Findings are discussed in terms of theoretical relevance (e.g., in understanding Gen Z) and practical significance (e.g., in marketing).

Introduction

Companies often use nostalgia-based marketing attempting to increase product desirability, yet its effectiveness compared to "essential" product factors like functionality is little researched. Moreover, its effectiveness on young consumers (specifically, Generation Z or current high schoolers is understudied. Product desirability is a measure of user preference for a product, created through user satisfaction and user perceived value coming together to answer, "How much does the user want this product"; consumers are more likely to purchase products with a higher desirability[1]. Past work has outlined two key factors influencing a product's desirability among consumers: (i) functionality—i.e., its utilitarian performance and capacity to perform its job—and (ii) nostalgia—i.e., its ability to arouse a comforting and bittersweet consumer emotion about longing for the past[2,3] . For instance, when choosing a product to listen to music with, consumers may choose between a CD player that is desirable because of its nostalgic appeal (albeit low-functionality) or a Bluetooth speaker that is more functional (but less nostalgic). Moreover, important individual differences among consumers may drive these preferences, such as their gender and age.

There appears to be no research considering how these various factors—specifically a product's nostalgic appeal and its functionality—affect consumer preferences among the youngest generation of consumers, Generation Z ("Gen Z"). Gen Z roughly comprises people born between 1997 and 2012 and is uniquely more diverse, educated, technologically savvy, financially conscious, and politically progressive than prior generations[4]. As Gen Z matures into adulthood, they will form the largest consumer base of the U.S. population, yet their unique experiences and outlook may color their consumption preferences differently than other generations, specifically concerning how much they value nostalgia. In addition to this goal of understanding Gen Z's consumer preferences, past research is conflicting with regard to how nostalgia generally influences product desirability. As such, the goals here were to update past work to include Gen Z and clarify these past inconsistencies. Importantly, other factors, namely product type and participant gender, were considered when understanding Gen Z's consumer preferences in conjunction with a product's nostalgia and functionality.

Product Nostalgia

In recent years, nostalgia has become an increasingly popular emotion in product design and marketing to boost product desirability[3]. For example, Polaroid's instant film camera was released in 1948, and though the company filed for bankruptcy in 2001, the company has since made a revival and continues to grow due to the increasingly popular retro trend[5]. Researchers define nostalgia as a "longing for the past," a bittersweet emotion typically associated with mostly positive feelings such as social connection, purpose, optimism, or inspiration, but also some negative emotions of longing or wistfulness[6,7]. Nostalgia is often felt in times of loneliness, existential doubt, and threat as it can comfort individuals

through the listed psychological benefits[8]. Therefore, in the consumer marketing world, nostalgia can cause certain people to find brands and products sincere, competent, and trustworthy, leading to stronger attachment, engagement, and ultimately purchasing desirability[9]. Interestingly, then, the relationship between nostalgia, product desirability, and age is largely unclear[10]. Studies across different countries and time periods reveal conflicting results on this association, with some past work finding that nostalgia is not associated with age, some finding that nostalgia peaks in mid-adulthood, and others finding that nostalgia is lowest in mid-adulthood[6,11,8]. In the present work, the influence of nostalgia was tested among the youngest consumer generation, Gen Z. This sample is also novel as most past research has focused on adults (18+) and not youth. How might nostalgia affect product desirability among Gen Z? Gen Z's characteristics provide two possibilities for their nostalgia-proneness in this context. First, Gen Z's significant time spent online has been argued to lead to feelings of loneliness, and Gen Z's self-reported levels of loneliness are higher than any other generation[4,12] . Conceptualizing nostalgia as a response to loneliness, Gen Z's heightened loneliness may prompt them to prefer nostalgic products. Alternatively, however, being more attuned to social issues and politically progressive, Gen Z attitudes on social and political issues differ from previous generations[13]. Because Gen Z is known to be attracted to brands with similar political stances to themselves, this may lead them to be attracted to products they associate with progress and modernity[4]. Nostalgia's call back to an older time may cause Gen Z to feel disconnected from nostalgic products. For example, a Polaroid camera might not invoke feelings of nostalgia for Gen Z because it was "before their time." Here, these competing predictions were tested. In addition to considering the general role of nostalgia on product desirability among Gen Z, whether this association varies by product type was also tested. A popular product type among Gen Z is technology ("tech") products, such as iPads, speakers, and wearables (e.g., Apple Watches). Although tech products' functionality is clearly important (who would want an iPad that does not function?), past work has shown that nostalgia also strongly influences tech product desirability[14]. To understand how relatively important nostalgia is in determining product desirability, the influence of nostalgia on product desirability among food products as a comparison group was also assessed. Past work has found that people prefer retro food products versus modern ones because they promote feelings of nostalgia, enthusiasm, in turn prompting consumers to believe they are of higher quality than modern counterparts[3]. Here, the role of nostalgia in affecting product desirability across two different types of products was tested to help generalize findings across product domains.

Lastly, the impact of participants' gender on their association between nostalgia and product desirability was considered. That is, do women or men desire a product that is more (versus less) nostalgic? Some past work suggests that women are slightly more nostalgia-prone than men[6], yet other research has found that men experience nostalgia to the extent that nostalgic ideals call back to a time when stereotypically masculine ideals were more prevalent[10]. Although here the gender stereotypicality of products was not manipulated, the impact of participants' gender on their preferences as a function of nostalgia was considered.

Product Functionality

Past work defines functionality of a given product as its ability to meet or exceed user requirements[15]. Improvements in functionality may be horizontal, offering a new or different functional feature (eg. two-in-one pen and pencil), or vertical, offering higher quality of the functional feature (eg. more ink)[16]. Regardless, high-functionality designs meet user needs and create feelings of satisfaction[17]. However, in today's product market, functionality can be easily copied by other companies, so products must compete with each other based on factors outside of function, such as nostalgia[18]. Still, a study on the automobile market in Japan indicated that though emotional appeals like nostalgia shape automobile desirability, key functional factors, such as safety, were always foremost important in consumers' purchasing cognition[2]. Moreover, past work shows that young adults (18-25) are more receptive to functional marketing appeals, whereas older adults (65+) are more inclined to emotional appeals due to aging and a narrowing time horizon, as in accordance with socioemotional theory[19,20]. Gen Z in the present study, being even younger than 18, may prioritize functionality in their product decisions similar to young adults in previous research. Moreover, products that focus on functionality are considered necessities while products focusing on emotional appeal are considered luxuries[21]. Given that Gen Z is known for conservative spending, participants in this study may find high-functionality products more desirable than less functional products[4]. Functionality may have different effects on desirability based on product type. As stated, the present study included food products and tech products. Within food products, functionality has a strong impact on desirability; for example, past work has found that consumers were willing to pay 10%-50% more for food with higher functionality packaging[22]. Although baseline functionality is essential for tech products to work, exceptional functionality may have a less pronounced effect on desirability than an emotion like nostalgia. Technology desirability involves rationalizable needs or wants that originate from whether the product can meet the user's goal but also highly emotional desires that revolve around a "non-rational decision-making process," thus desirability and functionality may not always align[23]. Research suggests that although technology products provide both functional and emotional benefits to users, most technology brands are

successful because of brand loyalty, which motivates consumer desire more than functional value does [14]. Lastly, how participant gender may affect product desirability based on its functionality was also investigated. Past work suggests that men prefer high-functionality products more than women do [24]. Although it is presently unclear whether this effect pertains to Gen Z, a similar occurrence will likely be present among individuals in the present study given that masculinity norms have remained relatively stable over time [25].

Present Study

The present study investigated the relative influence of nostalgia and functionality on product desirability for tech and food products among Gen Z women and men. Put differently, to what extent does Gen Z care about a product's nostalgia versus its functionality? Does this differ based on product type and/or participant gender? The results of this study may provide insight into the consumer preferences of Gen Z, a previously understudied but increasingly spendy subgroup of Americans, potentially allowing companies to more effectively design and market products targeted towards this group. This study may also help address inconsistencies in past research, such as unpacking the relationship between nostalgia and gender, and expand the study of individuals' nostalgia-proneness to populations previously not studied. However, it is worth noting that the participants of the study were limited to students in Northeastern U.S., and that only consumer technology and food products were examined, thus results cannot be generalized to Gen Z as a whole nor to all product types. Lastly, an exploratory analysis to test the effect of participant age on product desirability as a function of nostalgia, functionality, and product type was conducted. Although the sample was age-restricted to only high school aged Gen Z participants, past research presents conflicting findings on the relationship between nostalgia and age. Some studies suggest proneness to nostalgia is independent of age [6], but a Japanese study demonstrated that especially for men, nostalgia increases with age and peaks in mid-adulthood [11]. Yet still, a UK study indicated that, regardless of gender, nostalgia peaked in young adulthood years and declined in mid-adulthood [8]. To determine another age-related trajectory—i.e., among Gen Z—how nostalgia and age might interact to predict a product's desirability was investigated. In this study, participants rated the desirability of sixteen products spanning four categories (speakers, cameras, soda, and mayonnaise) divided by product type (tech, food). Within each category, pictures and descriptions varied products' nostalgia (low, high) and functionality (low, high). Finally, a secondary analysis determined the potential role of age in attenuating the aforementioned associations.

In all, though literature remains absent on the effectiveness of nostalgia on Gen Z, and unclear on nostalgia's associations with product type, gender, or age, nostalgia appears effective on most audiences overall, thus it may be expected to see some increase in desirability for high-nostalgia products among Gen Z consumers [9]. As for functionality, though its importance regarding product type is not yet clear, previously discussed literature suggests that it may matter for Gen Z, especially among men [4, 24]. However, functionality is understood as a baseline requirement. Thus, once achieved, other factors (namely in this study, nostalgia) will determine the desirability of products.

Method

Participants

The final, analyzed sample included 76 high school students (M_{age} = 16.77, S_{Dage} = 1.37) in the Northeastern U.S. recruited by the lead author via social networks. The initial sample included 82 students, but one was excluded for not answering 15 (of the 32 items), and five were excluded for identifying as gender non-binary (given the main interest in testing how participant gender interacts with other factors to influence product desirability, combined with this low cell size). Participants thus included 30 women and 46 men, who identified as either Asian (n = 38), White (n = 23), Black or African American (n = 5), Hispanic or Latine (n = 1), Middle Eastern or North African (n = 1), or bi/multiracial (n = 8).

Table 1

Descriptive statistics for survey respondents

Characteristic	Sample *n*	Sample %
Gender		
Women	30	39
Men	46	61
Race/ethnicity		
Asian	38	50
White	23	30
Black or African American	5	7
Hispanic or Latine	1	1
Middle Eastern or North African	1	1
Bi/multiracial	8	10
Age		
14	1	1
15	15	20
16	9	12
17	13	17
18	18	24
19	5	7
Not reported	15	20

This study was approved by an ethics committee comprising staff at Lumiere Education and the high school from which students were recruited (i.e., Associate Dean of Students and Science Department Chair). Before participating and consenting via Qualtrics (see below), participants also signed written informed consent forms, which were collected and reviewed by the lead researcher and were destroyed upon completion of

the study. Surveys did not gather identifying information such as names or contact information to ensure confidentiality.

Procedure and Stimuli

This study used a quantitative, within-between subjects experimental design as study participants gave numerical ratings for different products with variable levels of nostalgia and functionality. The study took place on Qualtrics, an online survey platform. After consenting, participants first provided demographic information regarding their age, gender, race/ethnicity, and school zip code. Participants then viewed one of four randomly-ordered blocks, either (i) JBL speakers, (ii) Fujifilm cameras, (iii) Coca-Cola containers, or (iv) Blue Plate mayonnaise containers. Two of these products (Coca-Cola containers, mayonnaise) were selected because they are food products, and two were selected because they are tech products (speakers, cameras). Food and tech were selected as product categories because they were well-known categories of consumer products commonly used or desired among Gen Z and/or their families. While tech and food products were different types of products, both categories had established instances of nostalgic design being used, thus offering plentiful examples of products with varying selectable nostalgia levels: Specifically, tech products could either represent progressive future or participate in the tech nostalgia trend[26] . Similarly, food products could express variable nostalgia levels using modern versus retro-inspired packaging[3]. Additionally, food, forming the third largest (12.8%) portion of 2022 US consumer spending, formed a comparison group against the effect of nostalgia in tech products[27]. To manipulate product nostalgia and functionality, within each product block, participants were presented with one of four randomly-ordered products that were either (a) high-nostalgia, high-function, (b) high-nostalgia, low-function, (c) low-nostalgia, high-function, or (d) low-nostalgia, low-function. For example, in the speaker block (see Figure 1), participants viewed four speakers in a random order, which were either a low-nostalgia high-functionality speaker, a low-nostalgia low-functionality speaker, a high-nostalgia low-functionality speaker, or a high-nostalgia high-functionality speaker. Each speaker was presented on a separate page with an image and a description underneath that highlighted its nostalgia (high vs. low) and functionality (high vs. low). These descriptions were constructed such that they were similar in sentence structure but only varied in words that highlighted variables of interest. For example, the description of the high-nostalgia, high-functionality speaker was (key words emboldened here for comparison across conditions but were not bolded to participants),

The JBL Authentics 500 has a power output of **270W**, allowing it to **powerfully** and faithfully recreate a large range of sounds at an **astounding volume**. Its design consists of an aluminum frame, Quadrex grille, and leather enclosure inspired from **1970s** JBL speaker designs. This speaker is known for its **retro appearance** and **exceptional sound quality** even at **large volumes**.

Fig. 1 Speakers Presented to Participants in the Speaker Block

Note. In a random order, participants viewed, read about, and rated the desirability of speakers that were either low-function, low-nostalgia (top left), high-function, low-nostalgia (top right), low-function, high-nostalgia (bottom left), or high-function, high-nostalgia (bottom right).

This is compared to the high-nostalgia, low-functionality speaker description, which read,

The JBL Authentics 200 has a power output of **90W**, allowing it to **decently** recreate a range of sounds at **normal volumes**. Its design consists of an aluminum frame, Quadrex grille, and leather enclosure inspired from 1970s JBL speaker designs. This speaker is known for its retro appearance and above average sound quality.

For all product descriptions, nostalgia was manipulated using terms such as “classic,” “retro,” “vintage,” and “nostalgic” (high-nostalgia) versus terms like “new,” “contemporary,” or “not nostalgic” (low-nostalgia). Functionality was manipulated through terms indicating magnitude, capacity, or user-friendliness such as “sizable volume,” versus “low volume” in Coca-Cola containers, “entry level” versus “professional” in cameras, “low volume” versus to “astounding volume” in speakers, or “requires a utensil” versus “does not require utensils” in mayonnaise, where the former terms indicated low-functionality and the latter terms indicated high-functionality. In conjunction with keywords, numerical values of liquid volume, audio power output, and megapixel count were also included as quantified indicators of functionality. These numerical values established a vertical differentiation between high and low-functionality products, suggesting a greater value proposition for the consumer. For instance, a higher speaker wattage, which prevents audio breakup at high volumes, indicates higher functional quality. Other factors were considered to reduce

variability among products and isolate key variables of interest, nostalgia and functionality. Product characteristics such as brand, color, and image background (white) were kept constant across all products of the same type. Specifically, all Coca Cola containers were of the red classic style, all mayonnaise containers were the same Blue Plate brand and yellow-blue color scheme, all speakers were black JBL speakers, and all cameras were black Fujifilm cameras. Appendix A1 presents all product images and descriptions.

Measures

The dependent variable was product desirability, assessed using a two-item measure. For each product, after viewing the image and reading the description, participants answered two questions: (i) "If you had an unlimited amount of money—or money weren't an obstacle—how much would you want to purchase this product?" and (ii) "How much do you like this product?" Participants rated these items on a seven-point Likert scale from 0 = not at all to 7 = a lot. Internal reliability, α = .91, of this measure was high[28].

Results

Analysis Plan

The primary goal of the analysis was to determine the effect of variable product nostalgia and functionality levels on its desirability. The main analysis was conducted with five gender non-binary participants removed due to low cell size, forming a sample of 76 students. The interactive influences of its type (tech vs. food), as well as participant gender (women vs. men) were also tested. As such, in the first (main) analysis below, a mixed effects linear regression model predicting product desirability from the four-way interaction between nostalgia, functionality, product type, and participant gender was tested. A random intercept for participants was included, and all predictor variables were mean-centered prior to analysis. A second analysis was conducted aiming to explore the effect of participant age on product desirability interacted with nostalgia, functionality, and product type. A mixed effects linear regression model was tested again, but this time predicting product desirability from the four-way interaction between nostalgia, functionality, product type, and participant age (i.e., substituting participant gender for age). Note that the second analysis comprises a smaller sample (N = 61) because 15 participants did not report their age. Again, this analysis included a random intercept for participant ID and all predictor variables were mean-centered prior to analysis.

Table 2

Multilevel regression table for main analysis between Nostalgia, Functionality, Product Type, and Gender

Effects	*Estimate*	*SD*	*95% CI LL*	*95% CI UL*	*t*(1126)	*p*
(Intercept)	3.95	0.85	3.76	4.15	40.29	<.001
Nostalgia	0.41	0.78	0.24	0.6	4.62	<.001
Functionality	0.59	0.78	0.41	0.76	6.56	<.001
Nostalgia × Functionality	0.16	1.56	-0.19	0.51	0.89	> .05
Nostalgia × Product Type	-0.42	1.56	-0.77	-0.07	-2.34	< .05
Functionality × Product Type	0.47	1.56	0.12	0.82	2.61	< .01
Nostalgia × Gender	-0.13	1.6	-0.49	0.23	-0.7	> .05
Functionality × Gender	0.41	1.6	0.05	0.77	2.22	< .05
Nost. × Func. × Prod. Type	-0.42	3.13	-1.13	0.28	-1.18	> .05
Nostalgia × Functionality × Gender	-0.09	3.2	-0.81	0.62	-0.25	> .05
Nostalgia × Prod. Type × Gender	-0.98	3.2	-1.7	-0.26	-2.67	< .05
Functionality × Prod. Type × Gender	0.65	3.2	-0.07	1.37	1.77	> .05

Main Analysis

Gender Differences in the Impact of Nostalgia by Product Type

There was a significant three-way interaction between nostalgia, product type, and participant gender, b = -0.98, SE = 0.37, p = .008. To probe this interaction, the effect of nostalgia by product type among each gender group was explored. As shown in Figure 2, women preferred both more nostalgic food products, b = 0.40, SE = 0.20, p = .045, and more nostalgic tech products, b = 0.58, SE = 0.20, p = .004. Among men, nostalgia made food products more desirable, b = 0.77, SE = 0.16, p < .001, but not tech products, b = 0.04, SE = 0.16, p = .803. Overall, then, it appears that women prefer more nostalgic tech products compared to men who prefer more nostalgic food products.

Table 3

Mean ratings and SD across nostalgia levels for varying gender and product types

Gender and product type	Low Nostalgia		High Nostalgia			
	Mean	*SD*	*Mean*	*SD*	*t*(1126)	*p*
Women, Food	3.48	0.2	3.88	0.2	-2	< .05
Men, Food	3.13	0.16	3.9	0.16	-4.7	< .001
Women, Technology	4.17	0.2	4.75	0.2	-2.87	< .01
Men, Technology	4.26	0.16	4.21	0.16	0.25	> .05

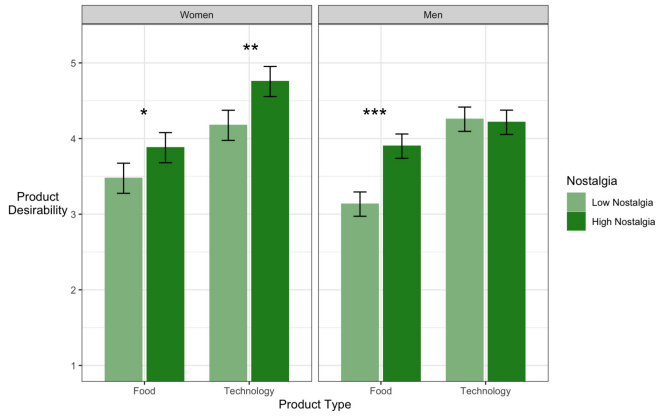
Functionality Mattered for Women and Men but Especially for Men

There was also a significant two-way interaction between functionality and participant gender, b = 0.14, SE = 0.18, p = .027. As shown in Figure 3, both women, b = 0.34, SE = 0.14, p = .017, and men, b = 0.75, SE = 0.12, p < .001, preferred functional products, but the effect of functionality on desirability was twice as strong among men compared to women.

Functionality Mattered for Food and Tech Products but Especially for Tech Products

There was also a significant two-way interaction between functionality and product type, b = 0.47, SE = 0.18, p = .009. As

Fig. 2 Impact of Nostalgia on Product Desirability as a Function of Product Type and Participant Gender



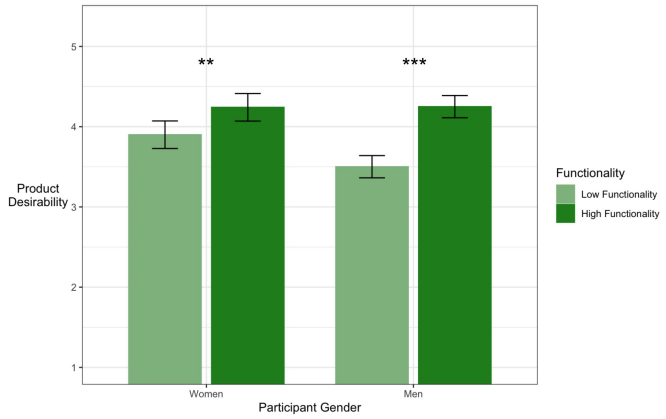
Note. ∗ p < .05, ∗∗ p < .01, ∗ ∗ ∗ p < .001. Error bars represent 1 standard error.

Table 4

Mean ratings and SD across functionality levels for varying gender

Gender	Low Functionality		High Functionality			
	Mean	*SD*	*Mean*	*SD*	*t*(191)	*p*
Women	3.9	0.17	4.24	0.17	-2.4	< .05
Men	3.5	0.14	4.25	0.14	-6.5	< .001

Fig. 3 Impact of Functionality on Product Desirability as a Function of Participant Gender



Note. ∗ p < .05, ∗∗ p < .01, ∗ ∗ ∗ p < .001. Error bars represent 1 standard error.

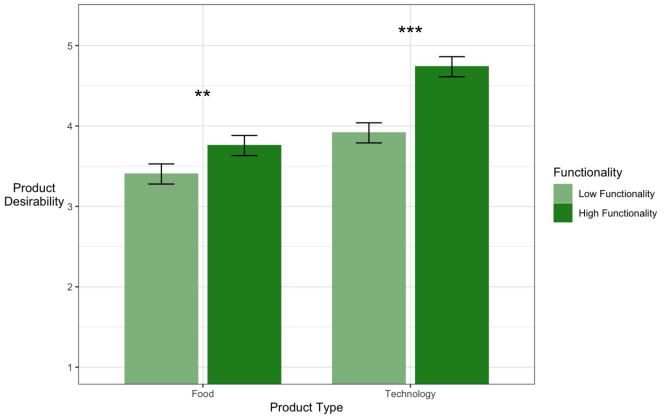
shown in Figure 4, participants preferred both high-functionality food, b = 0.35, SE = 0.13, p = .008, and tech products, b = 0.75, SE = 0.13, p = <.0001, but the effect of functionality on desirability was twice as strong for tech products compared to food products.

Table 5

Mean ratings and SD across functionality levels for varying product type

Product Type	Low Functionality		High Functionality			
	Mean	*SD*	*Mean*	*SD*	*t*(1126)	*p*
Food	3.43	0.13	3.77	0.13	-2.66	< .01
Tech	3.98	0.13	4.72	0.13	-5.75	< .001

Fig. 4 Impact of Functionality on Product Desirability as a Function of Product Type



Note. ∗ p < .05, ∗∗ p < .01, ∗ ∗ ∗ p < .001. Error bars represent 1 standard error.

Secondary Analysis

Older Participants Exclusively Demonstrated a Preference for Nostalgic Products

The model subsisting participant age for gender revealed a similar pattern of results, with one newly significant two-way interaction between product nostalgia and participant age, b = 0.16, SE = 0.07, p = .024, such that older participants demonstrated a stronger preference for nostalgic products than younger participants. To probe this interaction, a Johnson-Neyman Analysis revealed that nostalgia became a significant (p < .05) predictor of desirability for participants ages 15.49 years and older. The sample was split into three age groups,

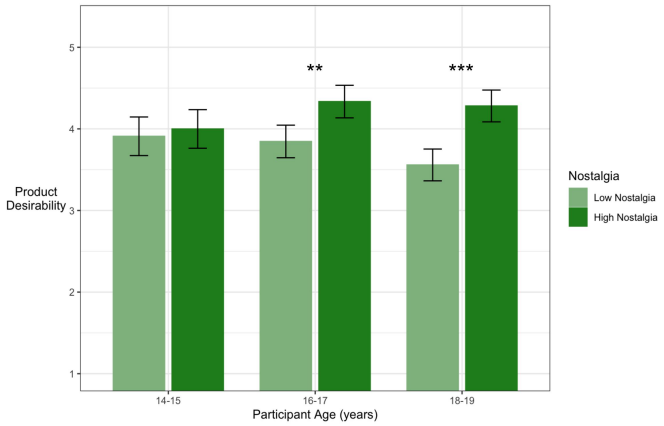
Table 6

Multilevel regression table for secondary analysis between Nostalgia, Functionality, Product Type, and Age.

Effect	*Estimate*	*SD*	*95% CI LL*	*95% CI UL*	*t*	*p*
(Intercept)	3.98	0.85	3.77	4.2	36.61	< .001
Nostalgia	0.47	0.75	0.28	0.66	4.92	< .001
Functionality	0.65	0.75	0.46	0.84	6.8	< .001
Nostalgia × Age	0.16	0.55	0.02	0.3	2.27	< .01
Functionality × Age	-0.04	0.55	-0.18	0.1	-0.59	> .05

Note: While other interactions are present in this multilevel model, this table is appended as interactions that do not involve age between Nostalgia, Functionality, and Product Type have already been listed in Table 2.

Fig. 5 Impact of Nostalgia on Product Desirability Across Participant Ages



Note. ∗ p < .05, ∗∗ p < .01, ∗ ∗ ∗ p < .001. Error bars represent 1 standard error.

the youngest of which comprised those below the J-N interval (i.e., 14- and 15-year-olds). As shown in Figure 5, 14–15-year-olds did not show a preference for nostalgic products, b = 0.09, SE = 0.19, p = .63. This is compared to 16–17-year-olds, b = 0.48, SE = 0.16, p = .002, and 18–19-year-olds, b = 0.72, SE = 0.16, p <.001, who demonstrated a clear preference for nostalgic products. Moreover, it appears that with age, participants became less interested in the low-nostalgia products but not more interested in the high-nostalgia products.

Table 7

Mean ratings and SD across age for varying nostalgia

	14-15 y/o		16-17 y/o		18-19 y/o	
Nostalgia	*Mean*	*SD*	Mean	*SD*	*Mean*	*SD*
Low	3.93	0.24	3.86	0.2	3.58	0.2
High	4.02	0.24	4.35	0.2	4.3	0.2

Discussion

The present study tested the impact of functionality and nostalgia on the desirability of products among Gen Z high schoolers. The impact of participant gender and age on their preferences for products was also tested. Regarding nostalgia, men preferred nostalgic food products more than women did, and women—but not men—preferred nostalgic tech products. That is, nostalgia did not affect men's preference for tech products. Functionality mattered more for tech than food products, and men cared more than women about functionality regardless of product type. Older participants—but not younger participants—demonstrated a preference for nostalgic products.

Regarding nostalgia's general appeal, Gen Z appears similar to past generations, which prefer nostalgic products. While existing research on the impact of age on nostalgia proneness reveal mixed findings, generation may be a better predictor of nostalgia[3]. When understanding nostalgia from the lens of generation as opposed to age, the results of this study align with understandings achieved in previous research where it has been found that Gen Z's values for "authenticity and realness" make them subjected to nostalgia, making nostalgic marketing an effective technique on Gen Z[5]. Furthermore, understanding nostalgia as a response to loneliness, existential doubt, and stress, Gen Z's responsiveness to nostalgia may be due to Gen Z's higher reported levels of loneliness compared to other generations[12]. Although nostalgia had a generally positive effect on desirability, there were nuances to this pattern. Specifically, women, but not men, preferred nostalgic tech products. Research suggests that nostalgia is correlated to skepticism about change and causes individuals to disfavor modern technologies[29]. Because polls suggest Gen Z women are more skeptical of the future than men, Gen Z women would be more affected than men by nostalgia and prefer nostalgic products[30]. Conversely, highly educated men are known to be more optimistic than women about technological progress[31]. Considering that Gen Z is highly educated, men in the present study would not have been impacted by nostalgia when selecting tech products due to a greater optimism than women regarding modern technology. Additionally, women have been found to use technology products to supplement social life, and in doing so prioritize aesthetic design, as opposed to men who prioritize functional design[32]. As nostalgia is a means of increasing social connection, high-nostalgia tech products may have appealed more to women due the social connection provided by nostalgic design[7]. However, a conflating motivation for women's selection of nostalgic tech products was their aesthetic value, which is also important in women's evaluation of tech products. Most high-nostalgia tech products presented in this study had arguably greater aesthetic appeal than the low-nostalgia tech products, thus women's preference for high-nostalgia tech products may have also been due to the increased aesthetic value of high-nostalgia tech products.

That nostalgia had stronger effects in determining food product desirability among men than women may challenge findings of existing research. Previous research outlined a link between purchasing frequency and preference for nostalgic products in food packaging: women, being the primary household grocery purchasers, assessed the value of food products more critically than men did, and had a greater preference for high-nostalgia food products, which they perceived as higher quality than modern counterparts[3]. Men in this study may have presented a stronger preference for nostalgic food products because men as opposed to women were the main purchasers of the presented food products. To represent the food category, this study used soda and mayonnaise, non-perishable, high-sugar or high-fat foods often perceived as unhealthy. As a

whole, men have been found to consume more unhealthy foods than women due to less nutritional knowledge in men and greater weight control motivation in women[33,34]. For instance, men have been found to drink soda more often than women do[35]. As such, because men more often than women purchased the food products presented, men's evaluations of the unhealthy food products in this study were greater impacted by nostalgia than women's.

That men were more impacted by functionality than women aligns with existing research and initial expectations[25]. Existing research outlines the norms that men desire functional products while women desire emotional products, which may have further stressed the importance of functionality in tech products for men[24]. Thus, men's strong preference for high-functionality products may have validated their masculinity, which could have been especially important in a high school context where masculinity is developing. In other words, even women and men as young as Gen Z demonstrate the same pattern as past generations, where men have stronger preference for functional products than women. Previous research found that within certain product types, including technology, key functional factors are required before consumers consider purchasing a product[2]. Existing research found clear benefits of functionality on food product desirability but found that tech product desirability relied more on brand loyalty than functionality[22,14]. Contrary to these findings, this study found that functionality had a stronger impact on technology products than food products. Although the narrow scope of the study means results may not reflect all food and tech products, results may still be related to characteristics unique to Gen Z. Firstly, Gen Z may have had higher baseline expectations than previous generations having grown up as "digital natives" and expecting tech products to be innovative and easy to use[36]. These higher expectations mean that low-functionality products otherwise acceptable for other generations may not meet Gen Z consumers' requirements, making them undesirable. Secondly, although research found brand loyalty as a determinant of tech product desirability across other generations, as Gen Z is theoretically the least brand-loyal of all generations, Gen Z's understanding of tech product desirability depends more on functionality than other generations do[37]. Thus, functionality being more important for tech than food products in the present study likely had to do with Gen Z's high expectations for technology and low brand loyalty.

Lastly, the present research shed additional insight on age's effect on nostalgia within Gen Z youth: beginning at age 16, Gen Z high school students became increasingly impacted by nostalgia in their product preferences. Likewise, the increase in nostalgia with the age of participants may be suggestive of increasing levels of loneliness and stress as expectations increase as students age over the course of high school. Considering that little research exists on nostalgia's impact on individuals aged younger than 18, this research provides a starting point into understanding the impact of nostalgia on consumer preferences of high school adolescents.

High schooler, late Gen Z responses to nostalgia in product preferences have been previously under-examined, and the present study revealed that nostalgia's effect on product desirability increases with age for Gen Z high schoolers. Variations in nostalgia across generations have been little studied, yet the present research suggests that generation may be another helpful framework to understand varying levels of nostalgia-proneness across individuals. Given that collective generational experiences shape individual desires, future research should further examine the effect of nostalgia on adolescents and adults in an attempt to understand nostalgia from the lens of generation to potentially understand nostalgia-proneness more accurately.

Limitations and Future Directions

As with any new experimental work, there are limitations to the present study. One such limitation was sample size as well as its representativeness of all of Gen Z in the U.S. The relatively low number of participants and lack of representation from other locations within the U.S. may make the results of this study non-indicative of and not generalizable to all Gen Z high schoolers in the U.S. as a whole. Future research in this area should include a larger scale study with nationwide breadth.

The study also had limited breadth in terms of product type. Only two product types, food and technology, were investigated, and within each product type, only two products were examined. Food products included soda and mayonnaise, specifically two types of commonly available non-perishables, and thus, findings may not generalize to all food products. Likewise, tech products included cameras and speakers, but did not include wearables such as watches, or smart mobile devices such as phones, laptops, or tablets, and so findings may also not be generalized to all tech products either. Future research may include more diverse products within these product type classes. Moreover, other product types, such as furniture, clothing, healthcare products were unexplored altogether and could be investigated in future studies as they comprise major market share.

Another limitation involved the assignment of levels of nostalgia and functionality. The study manipulated levels of nostalgia and functionality by assigning products to categories of "low-nostalgia" or "high-nostalgia," and "low-functionality" or "high-functionality", however nostalgia and functionality do not fall on a simple scale of high or low. For instance, 100W speakers may have lower functionality than 270W speakers, but 100W may be a sufficient speaker power output for most consumers, so is the 100W speaker really "low-functionality"? Furthermore, different participants may have had different understandings of nostalgia and functionality. Some participants may find an

entry-level compact camera nostalgic due to their personal childhood experience using it, while others may not. Further research may be necessary to understand what makes a product nostalgic or functional, and involve a more comprehensive scale than researcher-defined levels of "low" or "high" nostalgia and functionality.

This study is limited by the potential conflation of nostalgia and aesthetic appeal. Many high-nostalgia products presented to users could be considered more aesthetically pleasing than their low-nostalgia counterparts (see Appendix A1), thus any increase in desirability for high-nostalgia products could be in part also due to their increased aesthetic appeal. Future testing should also control for aesthetic appeal by presenting products that are more nostalgic – but not more aesthetically pleasing – than their modern counterparts.

In terms of methodology, because study participants only viewed one product at a time, they rated products unaware of the other product options, causing their responses to slightly differ from their preferences. Instead, four products from each type (eg. four cameras) should have been displayed on the same page. Future research should be larger scale, offer greater breadth of products, control for aesthetic appeal, consider more comprehensive scales of functionality and nostalgia, and present all products from each category simultaneously. Additionally, future research may want to investigate in more depth the trend revealed in the secondary analysis of nostalgia and age. Nostalgia appeared to become a significant factor in determining product desirability for high schoolers aged 16 and above. Other studies may wish to understand if and why nostalgia forms at this specific age, as well as consider this trend of nostalgia increasing with age pertains to adult Gen Z aged 20+.

Conclusions

The present study tested the impact of functionality and nostalgia on product desirability across factors such as product type, consumer gender, and consumer age. Existing research was unclear on the influence of gender on nostalgia. The present study found that both women and men, but especially men, found nostalgic food products more desirable. However, because only unhealthy foods were presented, men, the typical consumers of these products may have been more impacted by nostalgia than women. Additionally, whereas nostalgia mattered in women's ratings of tech products, it did not for men, potentially a result of women's skepticism about the future compared to men's optimism about technological progress. As suggested by previous literature, functionality mattered more for men than women, perhaps as a validator of masculinity. Though research outlined a strong impact of functionality on food products, functionality actually mattered more for tech than food products, perhaps due to Gen Z's higher expectation for tech functionality as "digital natives". Considering these findings, nostalgia-based marketing may be effective for Gen Z in the U.S. with important caveats, for example, that men might not care about tech products' nostalgic appeal (and instead defer to its functionality). Overall, then, marketers across different product types should design nostalgic products with an intersectional perspective in mind that considers the generation, gender, and age of the consumer.

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Appendix

A1: All product images and descriptions provided to participants.

Coca-Cola containers

Left to right: (i) high-nostalgia, high-function: The classic glass bottle design contains 12 oz. of Coca Cola. Not only does it carry a sizable volume of liquid, it also incorporates Coca Cola's classic hobble-skirt design. (ii) high-nostalgia, low-function: The 1990 vintage glass bottle design contains 6.5 oz. of Coca Cola. Although it carries a low volume of liquid, it incorporates Coca Cola's classic hobble-skirt design. (iii) low-nostalgia, high-function: The typical tin can contains 12 oz. of Coca Cola. Although its red tin-can design is quite simple, it carries a sizable volume of liquid. (iv) low-nostalgia, low-function: The mini tin can contains 7 oz. of Coca Cola. Its red tin-can design is quite simple, and it carries a low volume of liquid.

Left to right: (i) high-nostalgia, high-function: This container of mayonnaise features a vintage-style Blue Plate logo representing classic family heritage. Because it comes in the form of a squeeze bottle, it does not require utensils to be scooped or spread out, and can instead be applied directly. (ii) high-nostalgia, low-function: This container of mayonnaise features a vintage-style Blue Plate logo representing classic family heritage. Because it comes in the form of a jar, it requires a utensil like a knife or spoon to scoop out and spread the mayonnaise. (iii) low-nostalgia, high-function: This container of mayonnaise features a standard Blue Plate logo representing corporate modernity. Because it comes in the form of a squeeze bottle, it does not require utensils to be scooped or spread out, and can instead be applied directly. (iv) low-nostalgia, low-function: This container of mayonnaise features a standard Blue Plate logo representing corporate modernity. Because it comes in the form of a jar, it requires a utensil like a knife or spoon to scoop out and spread the mayonnaise.

Speakers

Left to right: (i) high-nostalgia, high-function: The JBL Authentics 500 has a power output of 270W, allowing it to powerfully and faithfully recreate a large range of sounds at an astounding volume. Its design consists of an aluminum frame, Quadrex grille, and leather enclosure inspired from 1970s JBL speaker designs. This speaker is known for its retro appearance and exceptional sound quality even at large volumes. (ii) high-nostalgia, low-function: The JBL Authentics 200 has a power output of 90W, allowing it to decently recreate a range of sounds at normal volumes. Its design consists of an aluminum frame, Quadrex grille, and leather enclosure inspired from 1970s JBL speaker designs. This speaker is known for its retro appearance and above average sound quality. (iii) low-nostalgia, high-function: The JBL Partybox 310 has a power output of 240W, allowing it to powerfully and faithfully recreate a large range of sounds at an astounding volume. Its design consists of a lit grille and rubber enclosure first released in the 2010s. This speaker is known for its contemporary appearance and exceptional sound quality even at large volumes. (iv) low-nostalgia, low-function: The JBL Partybox Encore Essential has a power output of 100W, allowing it to decently recreate a range of sounds at normal volumes. Its design consists of a lit grille and rubber enclosure first released in the 2010s. This speaker is known for its contemporary appearance and above average sound quality.

Cameras

Left to right: (i) high-nostalgia, high-function: The Fujifilm X-T5 is a classic, professional single lens camera whose functions include mechanical controls for ISO (brightness sensitivity), shutter sensitivity, exposure, shooting modes, and a 40.2 MP sensor. It has a retro style leather coating and silver top brim. This camera produces high quality images while retaining a fun, nostalgic feel when used. (ii) high-nostalgia, low-function: The Fujifilm instax mini 50 is a classic instant film camera whose functions are limited to 3 shooting modes, flash, and instant printing of images. This camera's glossy plastic coat and rounded shape references the first Fujifilm instax camera released 1998. Though this camera produces low quality images, it provides a fun, nostalgic feel when used. (iii) low-nostalgia, high-function: The Fujifilm GFX 50s is a new, professional camera whose functions include an LCD screen, wifi connectivity, low vibration image capture, and a 51.4 MP sensor. It has a simple rubber coating and neutral shape. This camera produces high quality images but does not provide a fun, nostalgic feel when used. (iv) low-nostalgia, low-function: The Fujifilm JX550 is a budget, entry-level compact camera whose functions are limited to a flash, zoom, ISO (brightness sensitivity), and a 16 MP sensor. It has a matte black coating and simple, compact shape. This camera produces low quality images and does not provide a fun, nostalgic feel when used.