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When sharing is scaring: hesitance to share suboptimal food due to fear of negative responses from recipients

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ABSTRACT

Sharing food directly or through food banks has emerged as a viable strategy to combat food waste. However, scant work has investigated what and why consumers choose to share in this context. Through five online experiments and one lab experiment, we demonstrate that consumers are less likely to share food with suboptimal attributes that do not influence intrinsic quality than optimal food. This is because consumers anticipate that recipients will respond less positively to suboptimal than optimal food. Notably, this negative effect diminishes when food banks transform food into meals (making the suboptimality invisible to recipients) or display campaign signage highlighting recipient appreciation for every donation. Additionally, we identify a discrepancy between givers' anticipation and recipients' actual responses, revealing that the negative effect of suboptimality on recipient responses is smaller than givers anticipate. Our findings offer insights into consumers' hesitance to share suboptimal food and how to address it.

1. Introduction

Food waste is a pervasive issue with detrimental consequences for sustainability. Globally, 19 % of food available to consumers, amounting to 1.05 billion tons of food, was wasted in 2022 (UNEP, 2024). Food waste exacerbates climate change (Ruzeviciute & Thürridl, 2023), as it accounts for 8–10 % of total global greenhouse gas emissions (UNEP, 2024). Addressing the issue of food waste, especially at the consumer level, is thus important.

Food may be left unused because of superficial flaws that do not affect intrinsic quality. Food with these superficial flaws is called suboptimal food and defined as food deviating from optimal standards in terms of cosmetic specifications (e.g., misshapen food), expiration date (e.g., close to expiration), or packaging (e.g., damaged wrapper), but retaining its intrinsic quality and safety (de Hooge et al., 2017). Prior research has documented consumers' reluctance to purchase and consume suboptimal food (Aschemann-Witzel et al., 2017; de Hooge et al., 2017; Hartmann et al., 2021), which contributes to food waste. In response, sharing has emerged as a strategy for redistributing food and reducing waste (Hossain, 2020; Makov et al., 2020; Mazzucchelli et al., 2021). The sharing of suboptimal food is rarely examined, yet investigating whether and why people share suboptimal food will provide valuable insights into sharing as a strategy for reducing food waste.

Defined as the voluntary distribution of items to others (Belk, 2014), sharing is common in life. Sharing food, in the context of our research, is not about sharing through collaborative consumption, where multiple individuals jointly consume food, but refers to giving food to others, either directly or indirectly, for example, through donations to food banks. Individuals can directly give food to others, such as neighbors or friends, or through digital platforms. We coin this type of sharing as direct sharing. The rise of food-sharing platforms, such as Olio, underscores the growing importance of this sharing movement (Amazon, 2022). In addition, a giver can also share food with others via organizations like food banks, without the giver and recipient directly interacting. We refer to this type of sharing as indirect sharing. Its prevalence is evident from the global expansion of community fridges (Oung, 2021) and food banks (Feeding America, 2022). The European Commission also encourages this strategy to reduce food waste and has suggested food donation as a destination for food surplus in the supply chain (European Commission, 2024). Food insecurity may become worse in the future due to "climateflation", which refers to higher prices for food and services caused by climate change, such as harvest disruptions.

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Under such circumstances, food sharing may become an even more critical solution.

Although policy suggestions and practical implementations for sharing as a strategy to reduce food waste are emerging, its suitability for suboptimal food has yet to be examined. This is particularly relevant to the sharing context because food items can easily acquire superficial imperfections through use or storage. While these superficial flaws do not affect quality, they may affect individuals' behavior. Therefore, this research examines how superficial food flaws, such as packaging damage, impact individuals' likelihood of sharing. We propose that individuals are less likely to share suboptimal (vs. optimal) food with others because they anticipate that recipients will respond unfavorably. However, recipients' actual responses may prove more positive than givers' anticipation, as we will show. This hesitance to share suboptimal food can be mitigated when food banks transform the food into meals or display a campaign signage highlighting recipient appreciation for every donation.

The current study makes several contributions. First, this research contributes to the literature on suboptimal food. Existing literature has mainly focused on consumers' resistance to suboptimal food in terms of purchase and consumption (Aschemann-Witzel et al., 2017; Hartmann et al., 2021), as well as the factors that moderate this resistance (Aydinli et al., 2023; Castagna et al., 2021; Suher et al., 2021). By examining the sharing of suboptimal food, this research expands the understanding of consumers' resistance to suboptimal food and provides insights into how to reduce this resistance, ultimately helping reduce food waste.

Second, this research contributes to the literature on food sharing, specifically the type of sharing where food is given from one person to another without joint usage. This form of sharing differs from related behaviors, such as gift-giving, in several key aspects. Gift-giving is largely symbolic and primarily driven by social motivations (Belk, 2010). In gift-giving, the giver expresses appreciation for the recipient, strengthening their relationship. In contrast, food sharing aims to reduce food waste. One might argue that suboptimality is irrelevant in food sharing, as any amount or type of food shared fulfills this primary goal, which is not the case in gift-giving, where certain gifts may be considered taboo. In addition, in indirect food sharing, one does not even know the ultimate recipient. In these cases, it is not clear if givers would consider the responses of recipients. So, it is a priori unclear if and to what extent insights from the gift-giving literature apply to the food-sharing context. Previous research has begun to investigate the antecedents (Kirmani et al., 2023; Mazzucchelli et al., 2021; Schanes & Stagl, 2019), consequences (Makov et al., 2020; Sundin et al., 2022), and implementation (Principato et al., 2023) of food sharing. The current research expands on this by investigating a potential barrier to food sharing, food suboptimality, and why it holds consumers back from sharing food. Moreover, our research uncovers moderators that can reduce the hesitance to share suboptimal food—transforming food to make the suboptimality invisible to recipients and highlighting recipient appreciation for every donation. These improve the giver's anticipation of how recipients respond and increase the giver's likelihood of sharing.

1.1. Anticipated recipient responses

Consumers inherently dislike wasting food (Bolton & Alba, 2012; van Geffen et al., 2020). Still, there are instances where consumers may not be able to fully utilize the food's utility. For example, they may possess food nearing its expiration date that they cannot consume in time. In this case, sharing emerges as a solution to prevent waste, but whether consumers share food may be impacted by their anticipation of how others will perceive this.

According to the Theory of Mind (Baron-Cohen et al., 1985), consumers can understand others' mental states, such as beliefs, intentions, and emotions, and this information is used to explain and predict others' thoughts and behaviors. It is also related to cognitive empathy or perspective-taking (Cuff et al., 2014) and plays a vital role throughout consumers' life as an essential social cognitive skill.

Not only do consumers predict what others think, but they also care about this, and act upon it. Consumers can understand and feel others' emotions and have compassion with them (Cuff et al., 2014). Consumers are concerned with how others perceive them, and they generally want to make good impressions on others (Kenny & DePaulo, 1993; Leary & Kowalski, 1990). Consumers also often attempt to shape how others perceive them, a phenomenon referred to as impression management (Schlenker, 2012). Consumers are motivated to behave/consume in ways that can be expected to create desirable and avoid undesirable impressions (Kim & Yi, 2016; Philp & Nepomuceno, 2020).

Thus, consumers naturally anticipate how others will respond to their actions, are concerned about these responses, and alter their behaviors based on these anticipations. In line with this, individuals' behaviors of sharing suboptimal products may be influenced by their anticipations of how others—and particularly the recipients—will respond. Drawing on literature on empathy (Cuff et al., 2014), impression management (Schlenker, 2012), and anticipated others' responses (Lu et al., 2022), and adapted to the current study, we examine four key anticipations of recipients' responses: (1) what the recipient would think of the giver, (2) how the recipient would feel, (3) how the recipient would rate the food, and (4) the recipients' acceptance of the food.

Consumers may anticipate less positive responses from recipients when they share suboptimal (versus optimal) food. According to categorization theory (Dion et al., 1972), products that align with the typical features of a category tend to be viewed more favorably than those that deviate. This suggests a "normal is good" or "abnormal is bad" mindset. Similarly, evolutionary theory suggests that humans are adapted to use visual cues to infer other characteristics (Synnott, 1989), leading to heuristics such as "beautiful is good" or "ugly is bad" (Eagly et al., 1991; Griffin & Langlois, 2006). Hence, suboptimal (versus optimal) food can be expected to induce lower quality inferences (e.g., taste perception; Cooremans & Geuens, 2019).

Social norms, that is, the explicit or implicit shared rules about appropriate behaviors within a particular group (Lapinski & Rimal, 2005), may be relevant as well. In various interpersonal settings, the norm that one should avoid giving flawed items to others may exist. For instance, in gift-giving, givers tend to refrain from giving items that are inferior to what they own themselves because they worry that inferior gifts are perceived as offensive to recipients (Givi & Das, 2022). While gift-giving and offering food to guests carry symbolic and relational significance, this is not the case in a food-sharing context. Here, the context arguably lacks symbolism. Food sharing is not about expressing appreciation but aims to reduce food waste. From this perspective, givers might adopt a different view on what is acceptable, finding that sharing suboptimal food is perfectly fine as it still fulfills the goal of minimizing waste.

Nonetheless, since both food sharing and gifting involve recipients, givers likely consider potential reactions in both cases. In food sharing contexts, givers may anticipate less favorable recipient responses in terms of perceptions of the giver, their feelings, their food rating, and their food acceptance when giving suboptimal (versus optimal) food. Such anticipations may occur in both direct and indirect sharing contexts, impacting individuals' likelihood of sharing suboptimal (versus optimal) food. Therefore, we hypothesize that:

H1. Consumers are less likely to share suboptimal (versus optimal) food in direct and indirect sharing contexts.

H2: The lower likelihood of sharing suboptimal (versus optimal) food is driven by givers' anticipation of less positive recipient responses.

1.2. Mitigating the resistance to sharing suboptimal food

Beyond anticipated recipient responses, other explanations also exist for a hesitance to share suboptimal food. For instance, damage to

packaging may activate health and safety concerns (White et al., 2016). Additionally, in line with research showing that how consumers view themselves can be negatively influenced by imagining the consumption of ugly food (Grewal et al., 2018), sharing suboptimal food might similarly tarnish givers' self-perceptions, thereby discouraging such sharing. To confirm the underlying mechanism of anticipated recipient responses beyond the potential impacts of givers' safety concerns and self-perceptions, we explore two potential strategies to mitigate this hesitance. We focus on the indirect sharing context (e.g., food banks) as this provides more managerial implications. The first intervention consists of a strategic communication highlighting that recipients appreciate *every* donation. In the second intervention, we manipulate the food form by presenting the food to recipients either in its original form (with the suboptimality visible to recipients) or in a processed form (making food suboptimality invisible to recipients; de Visser-Amundson et al., 2023). The latter reflects the decision of some food-sharing organizations to transform food into meals before serving it to recipients. For example, Food Bank of Santa Barbara County and Second Harvest Food Bank of Middle Tennessee partner with local restaurants that prepare meals using food bank ingredients and supplies (Food bank news, 2020). The New Hampshire Food Bank Culinary Job Training Program (USA) trains individuals in culinary skills, transforming food bank supplies into ready-to-eat meals (Feeding America, 2025).

Givers are aware of whether the food is optimal or suboptimal and they may be concerned about safety or view themselves in a worse light for sharing suboptimal food. However, if givers are reassured that recipients value every donation or if the food is presented to recipients in a processed form where its suboptimality is not visible, givers would need to worry less or not at all about potential negative recipient reactions. Therefore, if the hesitance to share suboptimal food is driven by anticipated recipient responses, the negative effect of food suboptimality on sharing should be mitigated when givers are reassured that recipients value the donation regardless or when givers know that the food is presented to recipients in a processed (versus its original) form. However, if the hesitance to share suboptimal food is solely driven by givers' safety concerns and self-perceptions associated with the food, the negative effect of food suboptimality on sharing should remain unchanged regardless the interventions. Thus, we posit that:

H3: The lower likelihood of sharing suboptimal (vs. optimal) food is mitigated when campaign signage highlighting recipient appreciation for every donation is present rather than absent.

H4: The lower likelihood of sharing suboptimal (vs. optimal) food is mitigated when food-sharing organizations transform food into meals for recipients (making suboptimality invisible to recipients) rather than leaving it in its original form (leaving suboptimality visible to recipients).

1.3. Anticipated vs. Actual recipient responses

Givers' anticipation of how recipients will respond may deviate from recipients' actual responses. Such disparities have been observed in a range of contexts (Yang et al., 2021), such as in gift-giving (Givi, 2020; Givi et al., 2022), initiating interactions (Kumar & Epley, 2022), and declining requests (Lu et al., 2022). These mismatches stem from the different perspectives that different parties of the interactions take (Epley et al., 2022). We propose that in food sharing, the perspectives of the giver and recipient may also show a mismatch.

Generally, givers are more risk-averse and care more about gifting norms than recipients (Givi et al., 2022). They avoid giving gifts that are inferior to their own possessions or that are high in quantity but low in quality, as these gifts are perceived as risky from a social perspective. In contrast, recipients are quite open to receiving such gifts (Givi & Das, 2022; Liu & Baskin, 2021). Likewise, givers tend to not give used products as gifts, but recipients do not mind it (Teigen et al., 2005). Although sharing is different from gift-giving with the former being less ceremonial and focusing less on pleasing recipients (Belk, 2010), it involves interpersonal interactions where risk aversion and norms may play a role. At the same time, according to the self-other differences literature, consumers value desirability more when deciding for others than for themselves (Lu et al., 2013). Suboptimal (versus optimal) food is often perceived as riskier (Wilson et al., 2017), less compatible with sharing norms (Papargyropoulou et al., 2014), and less desirable (de Hooge et al., 2017). Given the mismatches between givers and recipients, the difference between suboptimal and optimal food may be more pronounced for the giver than for the recipient. Therefore, we hypothesize that:

H5: The negative effect of food suboptimality on recipient responses is smaller than givers anticipate.

1.4. Current research

Fig. 1 provides our conceptual framework. We have conducted a series of experiments to test our hypotheses. Experiment 1 examines our proposed main effect of suboptimality on sharing across the three types of food suboptimality identified in the literature. Experiment 2 examines this effect for actual food donation with real behavioral consequences. Subsequently, Experiment 3 demonstrates the reluctance to share suboptimal food, regardless of whether the contact between giver and recipient is direct or indirect. Experiment 4 shows that anticipated responses of the recipient are the underlying process and additionally identifies the expected discrepancy between givers' anticipation and recipients' actual responses. Experiment 5 and 6 provide additional evidence for the proposed underlying process by showing that interventions focused on improving givers' anticipated receiver responses (i.e., food bank campaign signage highlighting recipient appreciation for every donation and transforming the food into meals, respectively) mitigate the hesitance to share suboptimal food. The data can be found at https://osf.io/m94wn/?view_only=85896c3aab3c42deb156e9bb1ade0406, while experiment materials are in supplementary materials. For all experiments, we have reported all measures, conditions, data exclusion, and how the sample sizes were determined.

2. Experiment 1

2.1. Participants and design

This experiment employed a 2 (food type: optimal vs. suboptimal) x 3 ((sub)optimality source: shape vs. package vs. expiration) within-subjects design. One hundred ten Dutch-speaking participants were recruited from a university panel. As compensation, participants had the chance to enter a lottery for eight digital vouchers of five euros. Five participants who did not complete all questions and one participant who failed the attention check ("This is an attention check question. Please do not select an answer here") were excluded, leaving 104 participants for the analysis (M_{age} = 48.87, SD = 18.54; 77.9 % female).

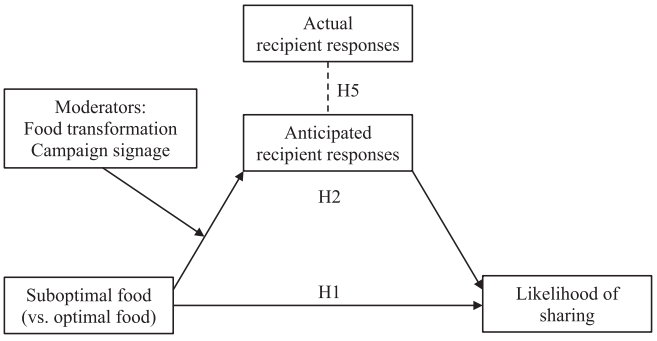

Fig. 1. The conceptual framework representing hypotheses.

2.2. Procedure and measures

Participants imagined that they had food products at home that they had bought at the supermarket but did no longer plan to eat, and reported what they would do with them. They saw six pictures created using photoshop and reflecting three types of suboptimality (see supplementary materials 1.1): appearance (orange: ugly/beautiful), packaging (tomato can: dented/intact), and expiration (bread: one day/nine days to its best-before date). Half of the participants first saw three suboptimal food products followed by three optimal food products, while the other half saw them in the opposite order. Within each category, the display order of the three food products was randomized. Participants reported their likelihood of sharing with others for each food product on a seven-point scale ("How likely is it that you would do the following?, give to someone else", 1 = very unlikely, 7 = very likely).[1]

2.3. Results

We conducted a repeated measures ANOVA with food type (optimal vs. suboptimal) and (sub)optimality source (shape vs. package vs. expiration) as the independent variables, and the likelihood of sharing as the dependent variable (Table 1 provides an overview of the descriptive statistics for all conditions across all experiments). The main effect of food type was significant, $F(1, 103) = 33.00$, $p < 0.001$, $\eta_p^2 = 0.24$, suggesting that participants were less likely to give suboptimal food than optimal food, supporting H1. For exploratory reasons, (sub) optimality source was also analyzed, revealing a significant main effect, $F(2, 206) = 3.56$, $p = 0.030$, $\eta_p^2 = 0.03$. Likelihood of sharing was significantly higher for tomato cans compared to oranges ($p = 0.023$) and bread ($p = 0.028$). The difference between bread and oranges was not significant, $p = 0.881$. The results also showed a significant interaction between food type and (sub)optimality source, $F(2, 206) = 3.85$, $p = 0.023$, $\eta_p^2 = 0.04$. Simple effect analysis showed a negative effect of food type on sharing across the three types of suboptimality ($ps < 0.031$). The effect was weaker for food close to expiration ($F(1, 103) = 4.80$, $p = 0.031$, $\eta_p^2 = 0.05$) than for food with an unattractive appearance ($F(1, 103) = 24.34$, $p < 0.001$, $\eta_p^2 = 0.19$) and damaged packaging ($F(1, 103) = 32.96$, $p < 0.001$, $\eta_p^2 = 0.24$; see Fig. 2).

2.4. Discussion

This experiment shows that when consumers do not intend to eat the food themselves, they are less likely to share suboptimal (versus optimal) food. This is consistent across all three types of food suboptimality. The observed weaker effect for expiration date than for appearance and packaging can be understood through the lens of the anticipated recipients' responses. Compared with food with an unattractive appearance or damaged packaging, which may lead recipients to question food quality and safety, food close to expiration has date labels that provide clear markers of usability, allowing recipients to confirm food quality and safety.

Additionally, while this experiment identified the negative effect of food suboptimality on sharing, it did not specify the sharing context (whether the giver and recipient interact directly or indirectly). Furthermore, this experiment used a hypothetical scenario. Hence, whether the findings can be extended to an indirect sharing context or to real life remains unknown. Experiment 2 addresses these issues.

[1] Besides examining the likelihood of sharing, we also explored consumers' likelihood of throwing away suboptimal versus optimal food, which pertains to the potential waste of suboptimal food. The relevant analysis and results are reported in supplementary materials 1.2.

Table 1
Descriptives of the experiments.

	Suboptimal	Optimal	Overall
Experiment 1			
Shape (oranges)	3.77 (2.25)	4.72 (2.28)	4.25 (2.31)
Package (tomato cans)	4.08 (2.34)	5.20 (2.30)	4.64 (2.38)
Expiration (bread)	4.03 (2.26)	4.51 (2.48)	4.27 (2.38)
Overall	3.96 (2.28)	4.81 (2.37)	
Experiment 2			
Shape			
Left on the table	39.0 %	26.8 %	32.9 %
Taken to home	20.7 %	32.9 %	26.8 %
Donated into the basket	40.2 %	40.2 %	40.2 %
Package			
Left on the table	53.7 %	25.6 %	39.6 %
Taken to home	12.2 %	19.5 %	15.9 %
Donated into the basket	34.1 %	54.9 %	44.5 %
Experiment 3			
Direct sharing	4.49 (2.12)	5.28 (1.82)	4.89 (2.00)
Indirect sharing	4.79 (1.95)	5.70 (1.57)	5.24 (1.83)
Overall	4.64 (2.04)	5.49 (1.71)	
Experiment 4			
Sharing			
Direct	3.79 (2.04)	5.28 (1.77)	4.53 (2.05)
Indirect	4.55 (2.02)	5.61 (1.48)	5.08 (1.84)
Overall	4.17 (2.06)	5.44 (1.63)	
Anticipated recipient' perceptions of the giver			
Direct	4.19 (1.63)	5.66 (1.08)	4.92 (1.56)
Indirect	4.05 (1.54)	5.75 (0.98)	4.91 (1.54)
Overall	4.12 (1.58)	5.70 (1.03)	
Anticipated recipients' feelings			
Direct	3.92 (1.67)	5.31 (1.10)	4.61 (1.57)
Indirect	3.82 (1.52)	5.48 (1.27)	4.65 (1.63)
Overall	3.87 (1.59)	5.40 (1.19)	
Anticipated recipients' food rating			
Direct	3.93 (1.68)	5.52 (1.01)	4.72 (1.60)
Indirect	4.34 (1.61)	5.92 (0.87)	5.14 (1.51)
Overall	4.14 (1.65)	5.72 (0.96)	
Anticipated recipients' food acceptance			
Direct	4.58 (1.77)	5.79 (0.97)	5.18 (1.55)
Indirect	5.12 (1.51)	6.25 (0.67)	5.69 (1.29)
Overall	4.84 (1.66)	6.02 (0.86)	
Actual recipients' perceptions of the giver			
Direct	4.82 (1.40)	5.83 (1.00)	5.33 (1.31)
Indirect	4.88 (1.60)	5.95 (1.09)	5.42 (1.47)
Overall	4.85 (1.50)	5.89 (1.04)	
Actual recipients' feelings			
Direct	4.48 (1.59)	5.25 (1.36)	4.87 (1.53)
Indirect	4.59 (1.66)	5.48 (1.32)	5.04 (1.55)
Overall	4.54 (1.62)	5.37 (1.34)	
Actual recipients' food rating			
Direct	4.44 (1.78)	5.37 (1.20)	4.91 (1.58)
Indirect	4.66 (1.77)	5.78 (1.02)	5.22 (1.54)
Overall	4.55 (1.77)	5.57 (1.13)	
Actual recipients' food acceptance			
Direct	4.86 (1.94)	5.48 (1.47)	5.17 (1.74)
Indirect	5.11 (1.88)	5.88 (1.20)	5.50 (1.62)
Overall	4.99 (1.91)	5.68 (1.36)	
Experiment 5			
Sharing			
No campaign	4.32 (2.12)	5.82 (1.46)	5.07 (1.97)
Campaign	5.72 (1.79)	5.97 (1.48)	5.85 (1.64)
Overall	5.03 (2.08)	5.89 (1.47)	
Experiment 6			
Sharing			
No food transformation	4.70 (2.04)	5.32 (1.81)	5.01 (1.95)
Food transformation	5.79 (1.44)	5.28 (1.95)	5.53 (1.72)
Overall	5.25 (1.84)	5.30 (1.87)	
Anticipated recipient' perceptions of the giver			
No food transformation	4.20 (1.49)	5.53 (1.06)	4.86 (1.45)
Food transformation	5.62 (1.19)	5.61 (1.16)	5.61 (1.17)
Overall	4.91 (1.52)	5.57 (1.11)	
Anticipated recipients' feelings			
No food transformation	4.13 (1.42)	5.41 (1.16)	4.77 (1.44)
Food transformation	5.62 (1.18)	5.51 (1.14)	5.57 (1.16)
Overall	4.88 (1.50)	5.46 (1.15)	
Anticipated recipients' food rating			

(continued on next page)

Table 1 (*continued*)

	Suboptimal	Optimal	Overall
No food transformation	4.23 (1.56)	5.53 (1.03)	4.88 (1.47)
Food transformation	5.58 (1.18)	5.45 (1.06)	5.52 (1.12)
Overall	4.91 (1.54)	5.49 (1.05)	
Anticipated recipients' food acceptance			
No food transformation	5.16 (1.48)	6.11 (0.81)	5.64 (1.28)
Food transformation	6.24 (0.83)	6.15 (1.07)	6.20 (0.95)
Overall	5.71 (1.31)	6.13 (0.94)	

Notes. For Experiment 2, this table displays the percentage of food for each behavior. For other experiments, this table displays the means with standard deviations in parentheses.

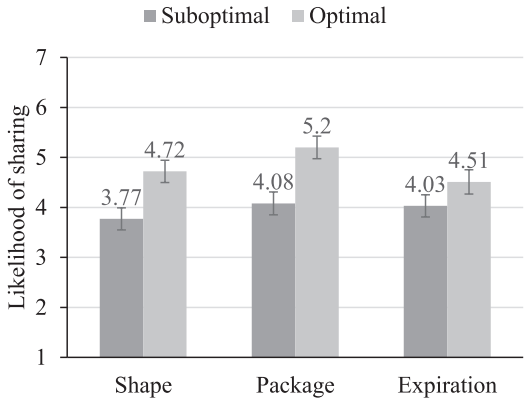

Fig. 2. Sharing suboptimal food versus optimal food (Experiment 1). Numbers are means in each condition. Error bars represent standard errors.

3. Experiment 2

Experiment 2 was a lab study that offered participants the opportunity to donate food to a local food bank (indirect sharing). We included two types of suboptimality in this experiment—shape and packaging. This experiment was pre-registered at https://aspredicted.org/4ZN_XM6.

3.1. Participants and design

This experiment utilized a 2 (food type: optimal vs. suboptimal) x 2 ((sub)optimality source: shape vs. package) within-subjects design. Eighty-two university students completed our study (M_{age} = 23.29, SD = 3.72; 73.2 % female). As this experiment was added to the end of an eye-tracking study, it is limited by the eye-tracking study's sample size.

3.2. Procedure and measures

After participants completed the eye-tracking study, we guided them to the food donation area and gave them a 5-euro gift voucher and four food items as a reward. These four food items were presented on a table. They included one bag of two straight cucumbers, one bag of two curved cucumbers, one pack of cornflakes with intact packaging, and one pack of cornflakes with damaged packaging. Participants were informed that they had an opportunity to donate some food items to a local food bank if they wished and were given a flyer describing this food bank. They could put any items they wanted to donate into a basket and take the other foods with them (see the supplementary materials 2.1). Next, participants filled in a survey to provide feedback on the rewards. In this survey, they evaluated the appearance of the four food items as the manipulation check ("Compared with XX A, what are your evaluations of XX B's appearance?", 1 = much more negative than XX A, 4 = no different from XX A, 7 = much more positive than XX A; XX A was the optimal cucumbers/cornflakes, XX B was the suboptimal cucumbers/cornflakes).[2] Participants additionally reported their age and gender. After participants left, researchers recorded which food items were donated into the basket, taken home, or left behind on the table. After data collection was finished, we sent all participants a debriefing email.

3.3. Results

First, as the manipulation check, we conducted one-sample t-tests against the value of 4 for participants' evaluation of the appearance. As expected, suboptimal food was rated lower than optimal food for both shape (M = 2.95, SD = 1.39; t = –6.80, p < 0.001, d = –0.75) and packaging (M = 2.70, SD = 1.53; t = –7.69, p < 0.001, d = –0.85), suggesting that our food suboptimality manipulation was successful.

Food items might be donated into the basket, taken with participants, or left behind on the table. First, we examined the effects of food type (suboptimal vs. optimal) and (sub)optimality source (shape vs. packaging) on the behavior (0 = left on the table, –1 = taken to home, 1 = donated into the basket) by conducting a multinomial generalized mixed model.[3] As Table 1 and 2 and Fig. 3 show, in terms of donating food relative to leaving food on the table, the main effects of food type and (sub)optimality source were both nonsignificant, while the interaction was marginally significant. Simple effect analyses further suggested that the effect of food type was not significant for shape but was significant for packaging. Specifically, compared to leaving food on the table, participants were less likely to donate suboptimal cornflakes than optimal cornflakes. Furthermore, in terms of taking food home relative to leaving food on the table, the main effects of food type and (sub) optimality source were both significant. Specifically, compared to leaving food on the table, participants were more likely to take optimal than suboptimal food home and were less likely to take cornflakes (package) than cucumbers (shape) home. The interaction effect was not significant. These results support H1 for the packaging (sub)optimality but not for shape (sub)optimality.

Table 2
Food behaviors (Experiment 2).

Responses	Effect	*b*	*SE*	*Exp (b)*	*p*
Home vs. Table	Food type	1.01	0.46	2.74	0.027
	(Sub)optimality source	–1.04	0.50	0.36	0.040
	Interaction	0.49	0.69	1.64	0.476
	For shape	0.85	0.42	2.34	0.042
	For package	1.21	0.49	3.37	0.012
Donation vs. Table	Food type	0.48	0.41	1.61	0.250
	(Sub)optimality source	–0.63	0.39	0.53	0.106
	Interaction	1.07	0.58	2.93	0.063
	For shape	0.38	0.37	1.46	0.313
	For package	1.24	0.36	3.45	0<.001

[2] In addition, we also asked about participants' expectations of the four food items' attributes in terms of food safety, taste, and nutrition as background information in Experiment 2 and 4. Detailed questions and related analyses can be found in the supplementary materials 2.2 and 5.2.

[3] Among the three behaviors, the most important comparison is between being donated into the basket and the combination of being left on the table and taken home. Therefore, we also exploratorily coded the two latter actions as 0 and the first action 1, conducting a generalized mixed model. The results pattern remained similar (see supplementary materials 2.3).

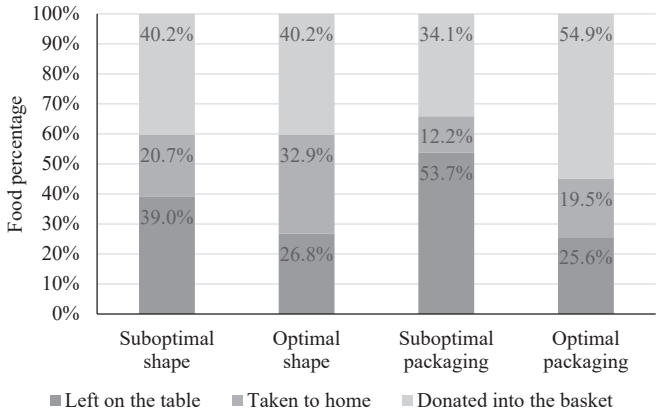

Fig. 3. Behaviors toward suboptimal food versus optimal food (Experiment 2). Numbers are the percentage of food for each behavior.

3.4. Discussion

This experiment replicates consumers' hesitance to share suboptimal (versus optimal) food for damaged packaging but not for unusual shape in the food donation context (indirect sharing). There may be several explanations. First, unattractive appearance inherent to food can be seen as authentic (van Giesen & de Hooge, 2019), while food with damaged packaging acquired externally can be harder to justify. In that sense, consumers' hesitance to share may be more pronounced for food with damaged packaging than for food with unattractive appearance. Second, differences in food unattractiveness between Experiment 1 and 2 may explain the different results. We conducted a post-test comparing the suboptimal orange in Experiment 1 and the suboptimal cucumber in Experiment 2 in terms of their perceived level of atypicality, defect, and suboptimality. The results show that the two products did not differ in perceived atypicality, but the suboptimal orange was perceived to be more defective and more suboptimal than the suboptimal cucumber (details in supplementary materials 2.4). This suggests that suboptimal foods signaling more defective qualities might be more susceptible to the negative effect of suboptimality on sharing.

4. Experiment 3

Experiment 3 compares the negative effect of food suboptimality on sharing in a direct sharing context (the giver and recipient meet each other) versus an indirect sharing context (the giver and recipient do not meet each other). As the most pronounced effect in Experiments 1 and 2 was observed for food with damaged packaging, we focus on this type of suboptimality to maximize power in the following studies. This experiment was pre-registered at https://aspredicted.org/YCX_FF9.

4.1. Participants and design

Experiment 3 employed a 2 (packaging: optimal vs. suboptimal) x 2 (contact: direct vs. indirect) between-subjects design. We performed a power analysis (power = 0.80, $N_{group} = 4$) using a small effect size ($\eta_p^2 = 0.02$), which suggested a sample size of 387 participants. Three hundred and ninety-one participants were recruited from Positly ($M_{age} = 41.82$, $SD = 11.75$; 49.4 % female). No participants were excluded from the analyses.

4.2. Procedure and measures

Participants imagined that they had a can of diced tomatoes at home that they bought from a supermarket but were not going to eat because someone in their households had developed a mild allergy to tomatoes. This can of diced tomatoes was either well preserved in an intact can (optimal packaging) or in a dented can (suboptimal packaging). Participants saw a picture of the can accordingly. Next, they indicated how likely (1 = very unlikely, 7 = very likely) they were to give the can of diced tomatoes to somebody around them (e.g., friends, neighbors, or colleagues) in the direct sharing condition or to a food bank (i.e., a non-profit organization that distributes food to others) in the indirect sharing condition. Later, as a manipulation check, participants evaluated the can packaging (1 = very bad, 7 = very good).

4.3. Results

To check our manipulation, we performed an ANOVA on the evaluation of the can packaging with packaging and contact as the independent variables. The main effect of packaging was significant, $F(1, 387) = 185.46$, $p < 0.001$, $\eta_p^2 = 0.32$, showing that participants evaluated suboptimal food to have worse packaging ($M = 3.75$, $SD = 1.52$) than optimal food ($M = 5.57$, $SD = 1.09$). This showed that the manipulation was successful. Additionally, the main effect of contact (direct vs. indirect; $F(1, 387) = 2.15$, $p = 0.143$, $\eta_p^2 = 0.01$) and the interaction between packaging and contact ($F(1, 387) = 0.39$, $p = 0.531$, $\eta_p^2 < 0.01$) were not significant.

The same ANOVA analysis on the likelihood of sharing showed a significant main effect of packaging, $F(1, 387) = 20.06$, $p < 0.001$, $\eta_p^2 = 0.05$. Participants were less likely to share suboptimal food than optimal food (Table 1), providing support for H1. Neither the main effect of contact ($F(1, 387) = 3.60$, $p = 0.059$, $\eta_p^2 < 0.01$) nor the interaction between packaging and contact ($F(1, 387) = 0.13$, $p = 0.717$, $\eta_p^2 < 0.01$) were significant.

4.4. Discussion

Experiment 3 demonstrates a lower likelihood of sharing suboptimal (versus optimal) food in the direct and indirect sharing contexts, suggesting that this effect generalizes across both contexts. This implies that, in addition to the established resistance to consume suboptimal food (Aschemann-Witzel et al., 2017; de Hooge et al., 2017), suboptimal food faces a higher risk of being wasted than optimal food. To address this, we need to understand the reasons behind the reluctance to share suboptimal food.

5. Experiment 4

Experiment 4 examines whether the resistance to share suboptimal food is driven by the anticipation of recipients responding less positively to suboptimal (versus optimal) food. Because the giver's anticipation of recipient responses may differ from recipients' actual responses, we also investigated this potential discrepancy. This experiment was pre-registered at https://aspredicted.org/BGM_CDS.

5.1. Participants and design

Experiment 4 employed a 2 (packaging: optimal vs. suboptimal) x 2 (contact: direct vs. indirect) x 2 (role: recipient vs. giver) between-subjects design. A power analysis (power = 0.80, $N_{group} = 8$, $\eta_p^2 = 0.015$; slightly smaller effect size as in Experiment 3 to have enough power to test the interaction effect), suggested a sample size of 518 participants. We recruited 528 participants from Positly. Three participants were excluded from the analyses for not completing all questions, resulting in a final sample of 525 participants ($M_{age} = 42.66$, $SD = 12.93$; 57.0 % women).

5.2. Procedure and measures

In the recipient condition, participants imagined being offered a can of diced tomatoes by someone around them (direct sharing condition) or by a food-sharing organization (indirect sharing condition). This can

had been bought from a supermarket but was not eaten because someone in the giver's household had developed a mild allergy to tomatoes. In the giver condition, participants imagined having a can of diced tomatoes at home that had been bought from a supermarket but was not eaten because someone in their households had developed a mild allergy to tomatoes. As in Experiment 3, participants saw a picture of the can of diced tomatoes that was either well preserved in complete packaging (optimal packaging) or dented (suboptimal packaging). They later evaluated the food packaging as a manipulation check (1 = very bad, 7 = very good).

Next, participants in the role of the recipient answered the following questions: if they were offered the can of diced tomatoes, (1) how would they feel (three items: disrespected – respected, disliked – liked, unpleasant – pleasant; DeBono and Muraven (2014)), (2) what would they think of the person who offered it (five items: negative – positive, unpleasant – pleasant, bad – good, unfavorable – favorable, dislikable – likable; Hagtvedt (2011)), (3) how would they rate the food (three items: low-quality – high-quality, unsafe-to-eat – safe-to-eat, unsatisfying – satisfying), and (4) the extent to which they would accept the food (two items: appreciation, acceptance, very unlikely – very likely, r = 0.78).[4] Participants in the giver condition first indicated their likelihood of sharing the food with someone around them or a food-sharing organization and next used the same scales to report their anticipated responses of the recipients who received the food from them or from the food-sharing organization: if they shared the can of diced tomatoes, (1) how would the recipient feel, (2) what would the recipient think of them; (3) how would the recipient rate the food; and (4) to what extent would the recipient accept the food and appreciate it. All responses were collected using seven-point scales. Detailed instructions can be found in supplementary materials 4.1.

5.3. Results

5.3.1. Manipulation check

An ANOVA on the evaluation of the can packaging with packaging, contact, and role as the independent variables showed that the manipulation check was successful. Participants evaluated suboptimal packaging to be worse (M = 3.90, SD = 1.54) than optimal packaging (M = 5.74, SD = 1.05; F(1, 517) = 255.74, p < 0.001, ηp2 = 0.33). No other main effects or interaction effects were significant (ps > 0.090).

5.3.2. Likelihood of sharing

Next, to test H1, we performed an ANOVA analysis on the likelihood of sharing with packaging and contact as the independent variables. As both H1 and H2 relate to effects for givers, we examined only data from conditions with a giver role. Consistent with previous findings and supporting H1, the main effect of packaging was significant, F(1, 258) = 31.22, p < 0.001, η_p^2 = 0.11, showing that participants were less likely to share suboptimal (versus optimal) food (Table 1). The main effect of contact was also significant, F(1, 258) = 5.80, p = 0.017, η_p^2 = 0.02, suggesting that participants would like to share food more in indirect than direct sharing contexts. The interaction between packaging and contact was not significant F(1, 258) = 0.92, p = 0.338, η_p^2 < 0.01.

5.3.3. Mediation role of anticipated recipient responses

Further, as an exploratory analysis in the pre-registration, we investigated whether the giver's anticipations of the recipient responses explains the effect of food suboptimality on sharing (H2). We conducted two different series of mediation analysis using the PROCESS macro (model 4, 20,000 bootstraps) with packaging as the independent variable (optimal packaging coded as –0.5, and suboptimal packaging coded as 0.5), sharing as the dependent variable, and contact as the covariate: (1) each aspect of anticipated recipient responses was included as the mediator individually; (2) all aspects were included as parallel mediators.

The results showed that each aspect of anticipated recipient responses individually mediated the relationship between packaging and the likelihood of sharing (see supplementary materials 4.2.2 for details), supporting H2. When all the four aspects of anticipated recipient responses were included as parallel mediators, the mediation effects of anticipated recipients' perceptions of the giver and their feelings became nonsignificant, and the mediation effects of anticipated recipients' food ratings and acceptance remained significant (Fig. 4). Specifically, participants anticipated that recipients would respond less positively to suboptimal (versus optimal) food, which decreased the likelihood of sharing.

5.3.4. Discrepancy between the giver and recipient

The giver's act of sharing was determined by their anticipation of recipient responses, yet their anticipation might deviate from the recipient's actual responses. To test this deviation (H5), we performed an ANOVA on the responses (givers: anticipated responses; recipients: actual responses) with packaging, contact, and role as the independent variables. The results showed that the main effect of packaging was consistently significant on the four responses (ps < 0.001), indicating that suboptimal food was responded to less positively than optimal food according to both givers and recipients. The main effect of role was significant on recipients' perceptions of the giver and their feelings (ps < 0.012) and was not significant on recipients' food rating and acceptance (ps > 0.284). The interaction between packaging and role was also significant on all the responses (ps < 0.025) other than the acceptance of the food (p = 0.062). Simple effect analysis indicated that the recipient responded less positively to suboptimal (versus optimal) food as the giver anticipates, but the difference between the two foods was less pronounced for the recipient than for the giver. Furthermore, on all the responses other than the acceptance of food, the discrepancy between the giver and recipient was significant for suboptimal food, but not for optimal food (Table 1 and 3, Fig. 5). The results supported H5.

Further, the main effect of contact was significant on the recipients' food ratings (F(1, 517) = 8.46, p = 0.004, η_p^2 = 0.02) and acceptance (F(1, 517) = 10.10, p = 0.002, η_p^2 = 0.02), suggesting that giver's anticipated recipients' responses and recipients' actual responses were more positive in the indirect sharing condition than in the direct sharing condition. No other significant differences were found.

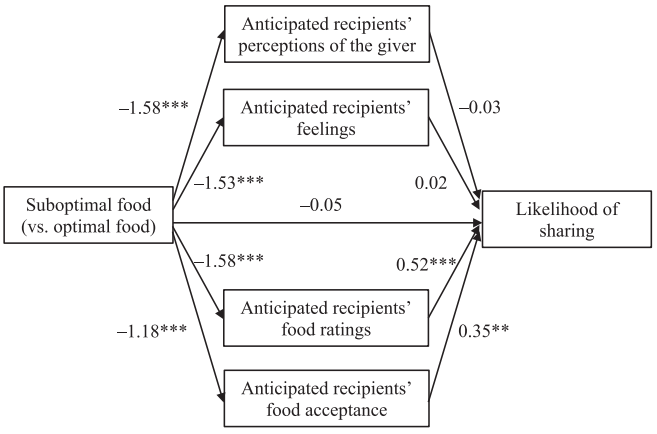

Fig. 4. Mediation effect of anticipated recipient responses (Experiment 4)
Notes. ***p < 0.001, ** p < 0.01.

[4] Although both items were intended to measure food acceptance, we did not explicitly mention this in the pre-registration. However, since the high correlation between the items indicated that they measured the same construct, we used the mean of the two items.

Table 3
Discrepancy between the giver and recipient (Experiment 4).

DV	Key effect	*F*	*p*	η_p^2
Perceptions of the giver	Packaging	130.01	< 0.001	0.20
	Role	15.86	< 0.001	0.03
	Packaging*Role	5.52	0.019	0.01
	For giver	94.38	< 0.001	0.15
	For recipient	41.05	< 0.001	0.07
	For optimal food	1.34	0.248	< 0.01
	For suboptimal food	20.01	< 0.001	0.04
Feelings	Packaging	86.99	< 0.001	0.14
	Role	6.39	0.012	0.01
	Packaging*Role	7.65	0.006	0.02
	For giver	72.97	< 0.001	0.12
	For recipient	21.57	< 0.001	0.04
	For optimal food	0.03	0.866	< 0.01
	For suboptimal food	13.98	< 0.001	0.03
Rating of the food	Packaging	111.44	< 0.001	0.18
	Role	1.15	0.284	< 0.01
	Packaging*Role	5.07	0.025	0.01
	For giver	81.86	< 0.001	0.14
	For recipient	34.56	< 0.001	0.06
	For optimal food	0.70	0.405	< 0.01
	For suboptimal food	5.51	0.019	0.01
Acceptance of the food	Packaging	51.61	< 0.001	0.09
	Role	0.60	0.439	< 0.01
	Packaging*Role	3.49	0.062	< 0.01
	For giver	40.89	< 0.001	0.07
	For recipient	14.16	< 0.001	0.03
	For optimal food	3.50	0.062	< 0.01
	For suboptimal food	0.60	0.440	< 0.01

5.4. Discussion

Beyond replicating the negative effect of food suboptimality on the likelihood of sharing in both direct sharing and indirect sharing conditions (H1), Experiment 4 demonstrates that the effect is driven by the anticipation of recipients responding less positively if they receive suboptimal (versus optimal) food (H2), especially the anticipated recipients' food ratings and acceptance. This may be because the other inferences (e.g., anticipated recipients' perceptions of the giver and their feelings) follow from the base of food being suboptimal, which supports anticipated food ratings and acceptance as the main drivers of the hesitance to share suboptimal food. In addition, this anticipation differs from the recipient's actual responses (H5). Specifically, the recipient responds more positively to suboptimal food than the giver anticipates, while no such difference exists for optimal food.

6. Experiment 5

Experiment 5 aims to provide additional evidence for the underlying mechanism of anticipated recipient responses beyond alternative explanations, including givers' safety concerns and negative self-perceptions associated with sharing suboptimal food. Specifically, if givers' hesitation to share suboptimal food is truly driven by anticipated negative recipient responses, a strategic communication reassuring givers that recipients appreciate every donation should attenuate givers' hesitation. This experiment was pre-registered at https://aspredicted.org/hdws-pnth.pdf.

6.1. Participants and design

Experiment 5 employed a 2 (packaging: optimal vs. suboptimal) x 2 (campaign: absence vs. presence) between-subjects design. A power analysis (power = 0.80, $N_{group} = 4$, $\eta_p^2 = 0.02$) suggested a sample size of 387 participants. Three of the 401 participants recruited from Positly were excluded from the analyses for not completing all questions, resulting in a final sample of 398 participants ($M_{age} = 44.56$, $SD = 12.32$;

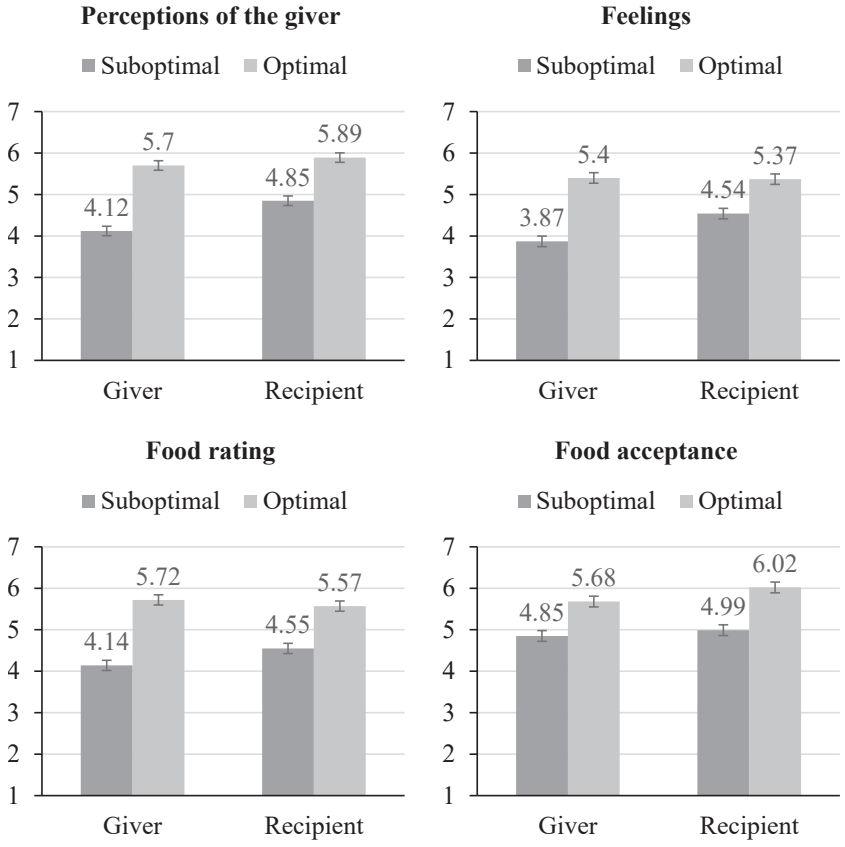

Fig. 5. Comparison between the giver's anticipation and the recipient's responses (Experiment 4). Numbers are means in each condition. Error bars represent standard errors.

48.7 % women).

6.2. Procedure and measures

The materials used for the no-campaign conditions were the same as those used for the giver in the indirect sharing conditions of Experiment 4. In the campaign conditions, participants additionally read that they came across a food bank campaign stating "Every donation matters: more appreciated than you think. Food bank recipients value all donations. That 'not a quite perfect' donation? It made someone's day." Participants then indicated their likelihood of sharing the can of diced tomatoes to a food bank. Next, they evaluated the packaging of the suboptimal and optimal food and indicated the extent to which they thought the food bank recipients would appreciate 'not quite perfect' donations (1 = definitely no, 7 = definitely yes) as manipulation checks (details in supplementary materials 5.1).

6.3. Results

6.3.1. Manipulation checks

The manipulations were successful. A first ANOVA on the evaluation of the food packaging with packaging and campaign as the independent variables showed a significant main effect of packaging, $F(1, 394) = 258.97$, $p < 0.001$, $\eta_p^2 = 0.40$, indicating that participants perceived suboptimal food to have worse packaging ($M = 3.87$, $SD = 1.46$) than optimal food ($M = 5.90$, $SD = 1.01$). The main effect of campaign, $F(1, 394) = 0.42$, $p = 0.518$, $\eta_p^2 < 0.01$, and the interaction between packaging and campaign were not significant, $F(1, 394) = 0.10$, $p = 0.751$, $\eta_p^2 < 0.01$.

A second ANOVA on the extent to which participants believed the food bank recipients would appreciate 'not quite perfect' donations indicated a significant main effect of campaign, $F(1, 394) = 7.54$, $p = 0.006$, $\eta_p^2 = 0.02$. Recipients were believed to appreciate 'not quite perfect' donations more in the campaign condition ($M = 6.04$, $SD = 1.34$) than in the no-campaign condition ($M = 5.66$, $SD = 1.46$). The main effect of packaging was also significant, $F(1, 394) = 17.64$, $p < 0.001$, $\eta_p^2 = 0.04$. Participants believed recipients would appreciate 'not quite perfect' donations more when sharing optimal food ($M = 6.14$, $SD = 1.06$) than suboptimal food ($M = 5.56$, $SD = 1.65$). The interaction between packaging and campaign was not significant, $F(1, 394) = 2.08$, $p = 0.150$, $\eta_p^2 < 0.01$.

6.3.2. Likelihood of sharing

Next, an ANOVA on the likelihood of sharing tested H3. The main effect of packaging was significant ($F(1, 394) = 25.17$, $p < 0.001$, $\eta_p^2 = 0.06$). Participants were less likely to share suboptimal food than optimal food (Table 1). A significant main effect of campaign ($F(1, 394) = 19.83$, $p < 0.001$, $\eta_p^2 = 0.05$) indicated that participants were more likely to share food in the campaign (versus no-campaign) condition. The interaction between packaging and campaign was also significant ($F(1, 394) = 12.82$, $p < 0.001$, $\eta_p^2 = 0.03$). Further simple effects analysis (Fig. 6) showed that participants were less likely to share suboptimal food than optimal food in the no-campaign condition ($F(1, 394) = 36.77$, $p < 0.001$, $\eta_p^2 = 0.09$), while this difference became nonsignificant in the campaign condition ($F(1, 394) = 1.04$, $p = 0.309$, $\eta_p^2 < 0.01$). The results thus supported H3.

6.4. Discussion

The results of Experiment 5 lend further support for our underlying mechanism and show that a food bank signage highlighting recipient appreciation for every donation reduces the hesitance to share suboptimal food. If safety concerns or self-perceptions (rather than anticipated recipient responses) would drive the lower likelihood of sharing suboptimal food, the campaign should not have mitigated the effect. Moreover, this campaign signage also increases consumers' likelihood of sharing food overall. Our finding provides an easy-to-implement intervention for food banks to address the hesitance to share suboptimal food and attract more food donations.

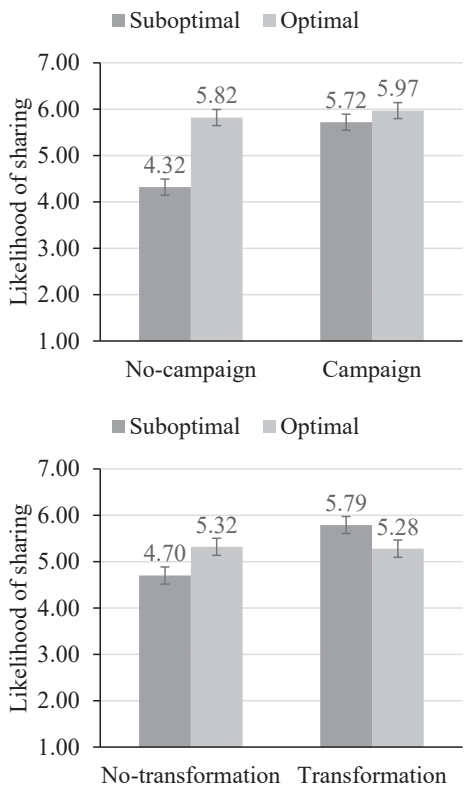

Fig. 6. The moderation effect of food bank campaign (Experiment 5) and food transformation (Experiment 6) on the effect of suboptimality on sharing. Numbers are means of each condition. Error bars represent standard errors.

7. Experiment 6

Experiment 6 aims to provide further evidence for our proposed underlying mechanism by testing a second intervention that targets anticipated recipients' food responses—the option of food-sharing organizations transforming food into meals for recipients. This option allows food to be presented to recipients in a processed form where food suboptimality is not visible to recipients. This experiment was preregistered at https://aspredicted.org/yyxn-p7mn.pdf.

7.1. Participants and design

Experiment 6 employed a 2 (packaging: optimal vs. suboptimal) x 2 (transformation: no vs. yes) between-subjects design. A power analysis (power = 0.80, $N_{group} = 4$, $\eta_p^2 = 0.02$) suggested a sample size of 387 participants. Four of the 392 participants recruited from Prolific were excluded from the analyses for not completing all questions, resulting in a final sample of 388 participants ($M_{age} = 39.77$, $SD = 12.21$; 63.7 % women).

7.2. Procedure and measures

The materials used for the original food conditions were the same as those used for the giver in the indirect sharing conditions of Experiment 4 and for the no-campaign condition of Experiment 5. In the food transformation condition, participants additionally read that the food-sharing organization would use the can of diced tomatoes to make tomato sauce and serve it to their recipients. Participants then indicated their likelihood of sharing the can of diced tomatoes to a food-sharing

organization, reported how they would expect the recipient to respond, and evaluated the packaging of the original food as a manipulation check, using the same measures as in Experiment 4.

7.3. Results

7.3.1. Manipulation check

Consistent with previous studies, the results for the evaluation of the original food packaging showed a significant main effect of packaging, $F(1, 384) = 148.54$, $p < 0.001$, $\eta_p^2 = 0.28$, indicating that participants perceived the packaging of suboptimal food to be worse ($M = 4.01$, $SD = 1.58$) than that of optimal food ($M = 5.62$, $SD = 0.99$). The main effect of transformation was not significant, $F(1, 384) = 0.74$, $p = 0.389$, $\eta_p^2 < 0.01$. The interaction between packaging and transformation was significant, $F(1, 384) = 13.21$, $p < 0.001$, $\eta_p^2 = 0.03$. Further simple effect analysis revealed that the less positive evaluation of suboptimal food than optimal food was more pronounced when a food-sharing organization did not offer to cook food into meals ($F(1, 384) = 125.17$, $p < 0.001$, $\eta_p^2 = 0.25$) than when it did ($F(1, 384) = 36.58$, $p < 0.001$, $\eta_p^2 = 0.09$).

7.3.2. Likelihood of sharing

An ANOVA on the likelihood of sharing tested H4. The main effect of packaging was not significant ($F(1, 384) = 0.10$, $p = 0.758$, $\eta_p^2 < 0.01$), but the main effect of transformation ($F(1, 384) = 7.99$, $p = 0.005$, $\eta_p^2 = 0.02$) was. Specifically, participants were more likely to share food when the food-sharing organization transformed food into meals than when it did not (Table 1). The interaction between packaging and transformation was also significant ($F(1, 384) = 9.21$, $p = 0.003$, $\eta_p^2 = 0.02$). Further simple effects analysis (Fig. 6) showed that participants were less likely to share suboptimal food than optimal food when a food-sharing organization did not offer to cook food into meals ($F(1, 384) = 5.59$, $p = 0.019$, $\eta_p^2 = 0.01$), while this difference became reversed but nonsignificant when a food-sharing organization did so ($F(1, 384) = 3.72$, $p = 0.055$, $\eta_p^2 = 0.01$). The results thus supported H4.

7.3.3. Moderated mediation effect

An exploratory analysis checked whether food transformation also moderated the mediation effect of the anticipated recipient responses in the relationship between food suboptimality and sharing. We conducted a moderated mediation analysis (PROCESS, model 8, 20,000 bootstraps) with packaging as the independent variable, transformation as the moderator (on a and c paths), four aspects of anticipated recipient responses as the parallel mediators, and sharing as the dependent variable (optimal food = –0.5, suboptimal food = 0.5; original food = –0.5, processed food = 0.5). The results showed that food transformation significantly moderated the indirect effects of anticipated recipients' food rating (*index of moderated mediation* = 0.47, *SE* = 0.20, 95 % CI [0.12, 0.91]) and acceptance (*index of moderated mediation* = 0.44, *SE* = 0.17, 95 % CI [0.15, 0.80]) and did not significantly moderate the indirect effects of anticipated recipients' perceptions of the giver (*index of moderated mediation* = –0.18, *SE* = 0.17, 95 % CI [–0.53, 0.15]) and their feelings (*index of moderated mediation* = 0.10, *SE* = 0.18, 95 % CI [–0.24, 0.48]; Table 4, Fig. 7). The indirect effects of anticipated recipients' food rating (*indirect effect* = –0.42, *SE* = 0.17, 95 % CI [–0.80, –0.12]) and acceptance (*indirect effect* = –0.40, *SE* = 0.14, 95 % CI [–0.70, –0.14]) were significant when the food-sharing organization did not offer to transfer food (leaving food suboptimality visible to recipients), but the indirect effects of anticipated recipients' food rating (*indirect effect* = 0.04, *SE* = 0.06, 95 % CI [–0.06, 0.18]) and acceptance (*indirect effect* = 0.04, *SE* = 0.06, 95 % CI [–0.07, 0.18]) were not significant when the food-sharing organization transformed food (making food suboptimality invisible to recipients).

Table 4
Moderated mediation effect (Experiment 6).

Variables	Effect	*b*	*SE*	*t*	*p*
Anticipated recipients' perceptions of the giver	Packaging	–0.66	0.13	–5.25	< 0.001
	Transformation	0.75	0.13	5.97	< 0.001
	Packaging x Transformation	1.33	0.25	5.28	< 0.001
	For original food	–1.32	0.18	–7.45	< 0.001
	For processed food	<0.01	0.18	0.02	0.983
Anticipated recipients' feelings	Packaging	–0.59	0.12	–4.71	< 0.001
	Transformation	0.80	0.12	6.39	< 0.001
	Packaging x Transformation	1.38	0.25	5.55	< 0.001
	For original food	–1.28	0.18	–7.25	< 0.001
	For processed food	0.11	0.18	0.60	0.551
Anticipated recipients' food rating	Packaging	–0.59	0.12	–4.71	< 0.001
	Transformation	0.64	0.12	5.13	< 0.001
	Packaging x Transformation	1.43	0.25	5.75	< 0.001
	For original food	–1.30	0.18	–7.39	< 0.001
	For processed food	0.13	0.18	0.74	0.460
Anticipated recipients' food acceptance	Packaging	–0.43	0.11	–3.89	< 0.001
	Transformation	0.56	0.11	5.09	< 0.001
	Packaging x Transformation	1.04	0.22	4.75	< 0.001
	For original food	–0.95	0.16	–6.11	< 0.001
	For processed food	0.09	0.16	0.60	0.546
Sharing	Packaging	0.26	0.18	1.49	0.138
	Anticipated perception	–0.14	0.12	–1.15	0.250
	Anticipated feelings	0.07	0.12	0.61	0.545
	Anticipated food rating	0.33	0.11	3.01	0.003
	Anticipated food acceptance	0.42	0.11	3.82	0<.001
	Transformation	0.13	0.18	0.70	0.482
	Packaging x Transformation	0.30	0.36	0.84	0.399
	For original food	0.11	0.26	0.43	0.668
	For processed food	0.42	0.24	1.72	0.087

7.4. Discussion

The results of Experiment 6 show that when food-sharing organizations transform food into meals, the adverse effect of food suboptimality on anticipated recipient responses, especially anticipated food rating and acceptance, is attenuated thereby increasing the likelihood of sharing suboptimal food. This experiment further confirms the mediation role of anticipated recipient responses. If safety concerns or self-perceptions (rather than anticipated recipient responses) would be the main drivers of the hesitance to share suboptimal food, the transformation of food into meals should not influence the sharing of suboptimal food. Because the giver knows whether food is suboptimal or optimal when giving food to the food-sharing organization, their safety concerns and self-perceptions associated with the food should not be influenced by whether the food-sharing organization transforms food

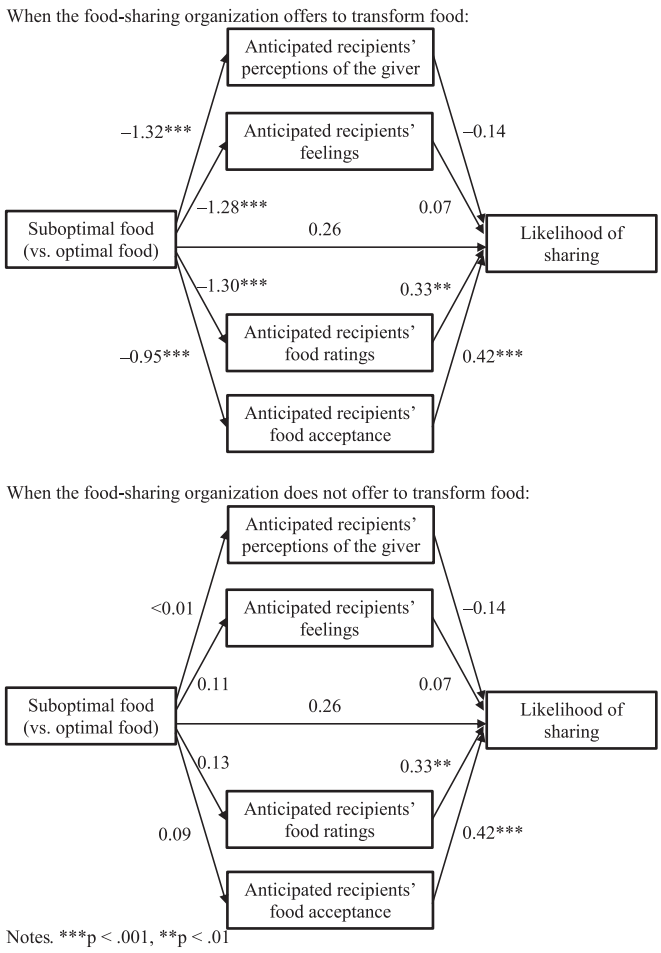

Fig. 7. Moderated mediation effect (Experiment 6) When the food-sharing organization offers to transform food: When the food-sharing organization does not offer to transform food: *Notes.* ***$p < 0.001$, **$p < 0.01$.

into meals.

8. General discussion

In this research, we investigated individuals' likelihood of sharing suboptimal (versus optimal) food. First, we demonstrated that consumers are less likely to share suboptimal (versus optimal) food, no matter whether they directly share the food with others or indirectly donate it to third-party charities. Next, we provided evidence that this effect occurs because consumers anticipate that recipients will respond less positively to suboptimal (versus optimal) food. Consistent with this idea, consumers' hesitance to share suboptimal food attenuates when a food-sharing organization displays a campaign signage highlighting recipient appreciation for every donation or transforms the food into meals (making suboptimality invisible to recipients). Interestingly, the negative anticipation for suboptimal food deviates from recipients' actual responses. In fact, recipients react less negatively to suboptimal food than givers anticipate.

8.1. Theoretical contributions

This research enriches the literature on empathy and impression management. Consistent with prior literature (Cuff et al., 2014; Schlenker, 2012), we find that consumers are concerned with how others feel. Consequently, they adjust their behaviors based on their anticipations. Importantly, we demonstrate that this phenomenon persists no matter whether the sharing is direct or indirect. Even in situations where givers are unaware of who will receive the food and have no direct interaction with recipients, they remain concerned with recipients' potential responses to their sharing. This underscores the inherent nature of humans as social beings who are mindful of the consequences of their actions, even when those consequences do not directly impact them.

Our findings also contribute to the literature by adding the perspective of how people anticipate recipients would evaluate suboptimal versus optimal food and its impact on their likelihood of sharing. In the study scenario, we explicitly told givers that the food's quality was not influenced by suboptimality. However, givers may still anticipate that recipients would form inferior evaluations of food based on suboptimality. In other words, previous literature suggests that the behaviors towards food can be influenced by how people view the food (Castagna et al., 2021; Cooremans & Geuens, 2019), while our findings further suggest that it can be influenced by how people think others would view the food.

Furthermore, our research augments the literature about systematic differences in perceptions or expectations between parties involved in social interactions (Givi et al., 2022; Kumar & Epley, 2022; Yang et al., 2021). We highlight a discrepancy between givers' anticipation and recipients' actual response, not only corroborating existing findings but also broadening the situations in which this discrepancy is observed. Notably, we find that this discrepancy exists when dealing with suboptimal food but not when dealing with optimal food. This observed effect is consistent with the literature showing that givers are more risk-averse and care more about gifting norms than recipients (Givi et al., 2022).

8.2. Practical implications

Given the global challenge of food waste and the expected increase in food insecurity in the future, optimizing food utility is both essential and urgent. In this context, food sharing emerges as a strategy to (partially) address these issues. Our study delves into the barriers that deter individuals from sharing food and uncovers the mechanism underlying this reluctance. A key discovery from our research is that recipients tend to respond to suboptimal food more positively than givers anticipate. This suggests that this barrier is mostly perceptual, and that aligning anticipations with actual recipient responses may be a strategy to increase sharing.

As a first potential intervention we tested a food bank campaign signage highlighting recipient appreciation for every donation and showed that it mitigated consumers' hesitance to share. This finding provides food banks with a practical, low-cost, and scalable strategy to overcome donors' concerns about sharing suboptimal food and increase overall food donation.

A second intervention showed that when food sharing organizations transform food into meals, the gaps in anticipated recipient responses and subsequent sharing between suboptimal food and optimal food are successfully narrowed. Building on this insight, more practical solutions can be proposed to promote food sharing. For example, policymakers and practitioners can develop communal kitchens where suboptimal food can be processed before distribution. Businesses specializing in cooking meals using suboptimal food (e.g., InStock Market) can also be developed. This service can encourage both the sharing and perhaps also the acceptance of suboptimal food.

8.3. Limitations and future research

This research has several limitations, which presents opportunities for future exploration. First, our research focused on food as an example to demonstrate the effects, given the importance of food sharing in food waste reduction. We expect that the findings can be generalized to broader product categories in similar sharing contexts, such as second-hand clothes, although there may be specific contexts where these effects are limited. For instance, when suboptimality is not necessarily a

drawback but rather a unique attribute indicating the products' value, the effect of product suboptimality on anticipated recipient responses and sharing behaviors may be reversed. A case in point could be antique furniture, where signs of wear might be seen as adding character or value (Reich et al., 2018). Future research may delve into the applicability of our findings across product categories.

Second, our findings can be further strengthened by observing the effects in real-life food donation data. The behavioral intentions measured in this research reflect individuals' willingness to act and exert effort in performing behaviors, however, a gap may still exist between intentions and behaviors (Sheeran, 2002). Our research has included a lab experiment using food donation with real behavioral consequences to address this issue. Future research can further investigate whether these effects can be replicated using real-life food donation data.

9. Conclusion

This research demonstrates that consumers are less likely to share suboptimal food than optimal food. This effect is observed regardless of whether consumers directly share food with others or donate food to food banks. This hesitance to share suboptimal food occurs because consumers anticipate that recipients will respond less positively to suboptimal food than to optimal food. Supporting this notion, the negative effect of food suboptimality on anticipated recipient responses and subsequent sharing likelihood diminishes when the food-sharing organization displays a campaign signage highlighting recipient appreciation for every donation or transforms food into meals (making food suboptimality invisible to recipients). Meanwhile, givers' anticipation also deviates from recipients' actual responses. The negative effect of food suboptimality on recipient responses is smaller than givers anticipate. This research provides insights into consumers' hesitance to share suboptimal food and suggests potential ways to mitigate this hesitance.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the author(s) used ChatGPT to check grammar and enhance clarity. After using this tool/service, the author(s) reviewed and edited the content as needed and took full responsibility for the content.

CRediT authorship contribution statement

Yi Zhang: Writing – review & editing, Writing – original draft, Visualization, Investigation, Formal analysis, Data curation, Conceptualization. **Erica van Herpen:** Writing – review & editing, Validation, Supervision, Funding acquisition, Conceptualization. **Mario Pandelaere:** Writing – review & editing, Validation, Supervision, Conceptualization. **Maggie Geuens:** Writing – review & editing, Validation, Supervision, Conceptualization.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jbusres.2025.115694.

Data availability

I have shared the link to my data in the manuscript.

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