1 **Consumer associations about other buyers of suboptimal food – and what it**

2 **means for food waste avoidance actions**

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1   **Highlights**

2   • Food waste can be tackled by offering suboptimal food in the store

3   • An online experimental survey tested associations with buyers of suboptimal food

4   • Buyers of suboptimal food are viewed as economic, thrifty, frugal and environmental

5   • Buyers of optimal food are regarded more heterogeneously

6   • Consumers project their environmental concerns and value consciousness on others

1 **Abstract**

2 One approach to tackling the imminent sustainability problem of food waste is to sell

3 suboptimal food which otherwise might be wasted. How the action of buying price reduced

4 suboptimal food is influenced by the fact that the consumer perceives to be in the public and

5 observed by others, however, is yet underexplored. The present research investigates which

6 associations consumers form when they see other consumers purchasing suboptimal foods. In

7 an online experimental survey, consumers of five European countries checked every word that

8 applied (CATA) from a set of items, that described what choosing a food item told them about

9 an acquaintance they met in the store in terms of his or her traits. The food item was optimal

10 or suboptimal, fresh or packaged food, and presented with a communication that either

11 underlined a budget saving benefit or a contribution to avoiding food waste. Results show that

12 consumers of suboptimal products are regarded as economic and thrifty, as well as frugal and

13 environmental. The associations with consumers of optimal products are more diverse, and

14 include both positive and negative wordings, ranging from successful over to fussy and

15 traditional. Consumers' own level of environmental concern and value consciousness explain

16 the degree to which another consumer is perceived as having similar traits, revealing that

17 consumers project their own traits on others. Findings imply that stores offering suboptimal

18 food should present and communicate the items in line with the characteristics of the store's

19 target group, and that suboptimal food choices can trigger positive associations.

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21 **Keywords:** Food waste; Suboptimal food; Communication; Association; Identity; Norms

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1. Introduction

Food waste is an increasingly acknowledged sustainability problem, which is why halving food waste is one of the United Nations' sustainable development goals (UN, 2015). All stakeholders in the supply chain, and in particular consumers, are summoned to act towards reducing food waste. Consumers can contribute to food waste avoidance in many ways (Schanes, Dobernig, & Gözet, 2018). Most of these actions are not necessarily observable for others, as these actions occur within the household. This might explain why moral norms have not been found to be strong predictors of avoidance intentions (Stancu, Haugaard, & Lahteenmaki, 2016). However, purchase behaviour in the store is an activity visible for others. Therefore, what others think about one's choices might be relevant for product choices, and it also influences choice among foods that are differently related to food waste.

Supermarkets have begun to undertake actions that are destined to reduce food waste. These practices include a shift from pay-per-unit to pay-per-weight for fruit and vegetables, selling the surplus single bananas, or reducing the price of foods that have become suboptimal in, for example, appearance or in approaching the indicated date (Aschemann-Witzel et al., 2017). Suboptimal products are typically visibly separated from the optimal products in an own container, or they are marked with colourful stickers that can communicate price-reduction or food waste avoidance (Kulikovskaja & Aschemann-Witzel, 2017). There are usually other customers in the store as well, and the products are visibly marked, including being described as an ethical consumer choice or a corporate social responsibility action of the store (Theotokis, Pramatari, & Tsiros, 2012). Thus, consumers might assume that other persons notice what they do, which means that social norms can come into play and influence product choices. That is, product choices may signal something about the consumer and his/her identity to other shoppers (Bartels & Onwezen, 2014).

47 With regard to suboptimal food, choosing or not choosing a price-reduced suboptimal food can

48 have different consequences in terms of consumers associations, also depending on the product

49 in question. For example, buying price-reduced food might be thought of as a smart economic

50 action (Zielke, 2014) or a frugal choice (Gatersleben, Murtagh, Cherry, & Watkins, 2017), or

51 as having the status of an ethical consumer (O'Connor, Sims, & White, 2017) and value

52 universalism and care for others (Schwartz & Bilsky, 1990). It might, however, also show

53 others that a consumer is 'stingy' (Zielke, 2014), excessively thrifty (Gatersleben et al., 2017),

54 or carelessly putting his/her loved ones at risk with unsafe food (Watson & Meah, 2013). If the

55 suboptimal product offer is accompanied with in-store communication talking about food waste

56 avoidance or the products are presented as either a budget saving or a food waste reduction

57 action on the stickers, then this communication can make respective motives more salient

58 (Loebnitz, Schuitema, & Grunert, 2015). Such communication tactics are likely stronger if the

59 respective consumer already perceives a higher level of environmental concern or is rather

60 value conscious in his or her purchases.

61 Consistent with the notion that similarity attracts (Montoya, Horton, & Kirchner, 2008),

62 individuals' own views typically influence what consumers think of others. In line with the

63 above reasoning that there are diverse potential consequences in terms of associations about

64 consumers purchasing price-reduced suboptimal food, and assuming that ascriptions to others

65 reflect own views on the issue, we aimed to explore the following question: Which associations

66 are ascribed to consumers who choose price-reduced suboptimal (vs. optimal) food, and do

67 these associations differ by product category, accompanying communication, or consumer

68 characteristics? The goal of the current study was to explore which ascriptions to others

69 selecting suboptimal food are chosen by which type of consumers. Thias allows to study how

70 the action is 'seen' by others and might affect mutual customer perception in the store.

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71 We find that consumers of suboptimal food are associated with both environmental and

72 economic traits, and that these associations are particularly powerful when they are congruent

73 with individuals' own opinions on environmental and economic issues. Consumers of optimal

74 food, on the contrary, are perceived more heterogeneously. Taken together, our findings

75 indicate that suboptimal food can trigger relatively favourable associations, and that stores

76 should align their communication to the motivational and psychographic characteristics of their

77 consumers.

78

79 2. Material and methods

80 *2.1 Sample*

81 In an online experimental study conducted across five countries – Germany, The Netherlands,

82 Sweden, Norway and Denmark – a sample of 3114 consumers was surveyed. The consumers

83 were part of the representative online panel of a market research agency (the company

84 Userneeds, member of ESOMAR). A sampling applying quotas for age, gender and region of

85 residence was used. Respondents using less than the mean survey duration, minus two standard

86 deviations, were excluded from the data. The final sample consisted of 3098 participants (see

87 Table 1 for an overview of the sample characteristics).

88 Insert Table 1 here

89 *2.2 Experimental design and survey sequence*

90 The experiment was part of a larger study in which consumers saw both optimal and suboptimal

91 food products, and had to make a choice as well as assess the quality dimensions. The data

92 analysed here focus on how consumers perceive others who chose either optimal or suboptimal

93 food.

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94 The experiment explored how ascriptions to other individuals are influenced by whether they

95 are described as purchasing either suboptimal or optimal foods, depending on product category

96 and marketing communication. Respondents were randomly allocated to the following

97 experimental groups in the experiment: 2 product categories x 3 communication types x 2 types

98 of food items (suboptimal or optimal), resulting in 12 experimental groups.

99 For the type of item, the respondents were shown items from the product category (packaged

100 food: bread or fresh food: potato). They were shown either a control communication, a

101 communication focusing on the price-reduction and budget saving effect, or a communication

102 that appealed to taking pity of the item and avoiding that it ends as food waste. Moreover,

103 respondents were either shown a picture of an optimal or a suboptimal food item of the

104 category.

105 The respondents were asked to imagine that they saw someone they knew, and that this person

106 was in the process of buying the product. The name indicated that the person was either male

107 or female. The gender was introduced to make the question more personal by mentioning an

108 actual person's name. The names were chosen so that they represented typical names in each

109 country, without necessarily being associated to a certain age cohort (see Table 2 for the

110 experimental design).

111 Insert Table 2 here

112 *2.3 Product categories and communications*

113 Bread was used as it is a frequently bought category, and the practice of reducing its price when

114 approaching the date or not being fresh anymore is common (Kulikovskaja & Aschemann-

115 Witzel, 2017). Potatoes are a fresh produce of common use in all the countries of the study,

116 and fresh produce is a category where a lot of food waste due to odd shape or imperfection

117 occurs (Priefer, Jörissen, & Bräutigam, 2016).

118   The products, which each were characterized by a type of sub-optimality typically seen in this

119   category, were either not further communicated (control group), or accompanied by the two

120   types of alternative communications. The first made the benefits of budget savings more

121   salient, and the second indicated that consumers should take care of the item, either because it

122   did not look perfect but was of fine taste (potato) or because this would save it from food

123   wastage (bread). The second communication is called 'personal' or 'emotional' in the

124   following. All suboptimal products were reduced in price by 50%, which is a common extent

125   of reduction (Aschemann-Witzel, 2018) (see Figure 1 for an example of the images used).

126   Insert Figure 1 here

127   *2.4 Associations and survey measures*

128   As dependent variables, respondents assessed which words 'told them' something about the

129   person in question described in the scenario (e.g. seeing person X they knew and just met, being

130   in process of buying item Y). The 15 words were chosen to reflect firstly, on negative or

131   positive associations to the price-reduction (e.g., economical, stingy, Zielke, 2014), secondly,

132   on value orientations underlying choice (e.g., caring, successful Schwartz & Bilsky, 1990), and

133   thirdly, providing an expression of positive or negative thoughts on motives or consequences

134   of choosing suboptimal or optimal food (e.g., frugal, risky, or fussy). The latter was based on

135   findings of food waste research showing consumer thoughts on frugal lifestyle (Cappellini &

136   Parsons, 2012; Evans, 2012), food safety risks (Watson & Meah, 2013) or a good provider

137   identity (Graham-Rowe, Jessop, & Sparks, 2014) being on consumers' minds when discussing

138   food waste related behaviours. The wordings had been tested previously in another study

139   (Aschemann-Witzel, Giménez, & Ares, 2018). Respondents checked as many adjectives as

140   they felt applied to the person; thus, the question was a Check-All-That-Apply (CATA) task,

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141 which is applicable for assessing product-related emotions (Jaeger, Lee et al., 2018). The

142 question asked and items used can be seen in Table 3.

143 Insert Table 3 here

144 As background psychographic and thus individual traits, environmental concerns were

145 measured with six items from Haws, Winterich, and Naylor (Haws, Winterich, & Naylor,

146 2014), and value consciousness with three items from Lichtenstein, Ridgway, and Netemeyer

147 (Lichtenstein, Ridgway, & Netemeyer, 1993). The words and the measures can be found in

148 Table 4.

149 Insert Table 4 here

150 *2.5 Analysis*

151 The CATA questions were explored in two steps: Firstly, we used chi-square tests, Cochran's

152 Q test and McNemar multiple comparison tests to study frequency of mention of all the words,

153 comparing between category, communication type, and optimality or sub-optimality of item.

154 A correspondence analysis (CA) was also run to visualise the variations in buyer descriptions.

155 Moreover, effects of location condition (supermarket or farmer's market), respondent gender,

156 and buyer gender were investigated in ANOVA general linear models for the three main

157 ascribed buyer characteristics emerging (models with the main effects of Location,

158 Gender_Respondent, Gender_Buyer, Product, Opt/SubOpt, and Communication).

159 Secondly, to study the influence of psychographics, we created factors of selected adjectives

160 associated with a consumer choosing suboptimal (vs. optimal) food, and compared these

161 factors with the participants' own psychographics, as measured through their environmental

162 concerns and value consciousness. These factors corresponding to consumers choosing

163 suboptimal (vs. optimal) food consisted of two sum scores based on frequency and correlation

164 of choice of adjectives and by computing the number of affirmative responses, if any,

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165 participants gave. The first factor was computed using the items: environmentally oriented,

166 caring, and inattentive, with the last item being reverse coded. The second factor contained the

167 items: economic, frugal, and thrifty. For simplicity, we refer to these factors as the

168 'responsibility factor' and the 'price sensitivity factor', respectively. The factors' relation to

169 the participants' psychographics were analysed with simple moderation analyses (PROCESS

170 model 1) (Hayes, 2013).

171

172 **3. Results**

173 *3.1 Ascriptions to others purchasing suboptimal food*

174 The frequency of selection of terms from the CATA task to describe buyers was compared

175 between the 12 conditions varying for product categories (packaged or fresh), food item

176 (optimal or suboptimal), and communication type (price, personal/emotional, or control)

177 communication (see Table 5). The Chi-square test of independence shows high significance

178 (χ^2=857.82, $p < .0001$) indicating that respondents used different adjectives to characterise

179 buyers in the 12 different conditions.

180 Insert Table 5 here

181 Observing the pattern, it shows that buyers of suboptimal products were especially qualified as

182 "thinks very economical", "thrifty", "frugal," and "environmentally oriented". Buyers of

183 optimal products were especially qualified as "fussy", "successful," and "traditional". These

184 characteristics dominated both for buyers of fresh and of packaged products, and across the

185 different communication conditions. There was, in addition, a tendency to assess buyers of

186 optimal product as "inattentive", and of buyers of fresh suboptimal products as "risky".

187 Insert Figure 2 here

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188 The correspondence analysis reports 89.6% of the variation on factor 1, splitting suboptimal

189 product buyers to the left from optimal product buyers to the right (see Figure 2). Along factor

190 2 (4.0% variation) we can see that descriptions of suboptimal product buyers are more uniform

191 (showing less vertical spread) than descriptions of optimal product buyers.

192 Further, effects of gender (respondent and buyer), product category and type, and

193 communication were investigated in ANOVA general linear models. Communication and

194 buyer gender did not have any effect on personality ascriptions, while sub-optimality had

195 effects on all terms except "caring" (Results not shown). Figure 3 reports differences for three

196 key attributes: "environmentally oriented", "thinks very economical", and "traditional". Buyers

197 were more typically ascribed as "environmentally oriented" by female respondents than by

198 male respondents. Buyers of packaged products and in particular of suboptimal products were

199 typically ascribed as "environmentally oriented". The ascription to the buyer as "thinks very

200 economical" was more often chosen in packaged products, when the budget saving was made

201 more salient, and in particular for suboptimal products. The item "traditional" was not only

202 more often chosen for optimal products, but also for fresh products in general.

203 Insert Figure 3 here

204 *3.2 Consumer psychographics explaining ascription to others*

205 To investigate whether participants' own orientation (i.e., environmental concerns and value

206 consciousness, respectively) moderated which wordings they chose for the consumer selecting

207 either optimal or suboptimal food by means of the responsibility factor and the price sensitivity

208 factor, we conducted two simple moderation analyses (PROCESS Model 1) following the

209 guidelines proposed by Hayes (Hayes, 2013). In other words, we explored the match between

210 participants' own individual traits and the ones ascribed to the consumer choosing optimal (vs.

211 suboptimal) food.

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212 For the first moderation analysis, the effect of environmental concerns on participants'

213 responsibility perceptions was significant and positive ($\beta = .09$, $t = 9.49$, $p < .001$), just as the

214 effect of food option ($\beta = .47$, $t = 19.02$, $p < .001$). Importantly, and consistent with our

215 theorizing, the impact of food option on responsibility perceptions was moderated by

216 participants' environmental concerns ($\beta = .13$, $t = 6.90$, $p < .001$). Thus, participants'

217 responsibility perceptions of another person (checking items of environmentally oriented,

218 caring, and (reverse coded) inattentive) were positively influenced if the person was described

219 as consuming suboptimal (vs. optimal) food, and this effect was particularly powerful among

220 participants scoring high (vs. low) on environmental concerns themselves (see Figure 4).

221 For the second moderation analysis, the effect of value consciousness on participants' price

222 sensitivity perceptions was significant and positive ($\beta = .08$, $t = 6.90$, $p < .001$), as was the

223 effect of food option ($\beta = 1.05$, $t = 34.41$, $p < .001$). In line with our conceptualization, the

224 effect of food option on price sensitivity perceptions was moderated by participants' value

225 consciousness ($\beta = .07$, $t = 2.98$, $p = .003$). Participants' price sensitivity perceptions of another

226 person (checking items of economic, frugal and thrifty) were positively influenced if the person

227 was described as consuming suboptimal (vs. optimal) food, and this effect was stronger among

228 participants scoring high (vs. low) on value consciousness (see Figure 4). Controlling for all

229 factors used as variables in the first experiment did not change the nature and significance of

230 the results obtained in the moderation analyses

231 Insert Figure 4 here

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233 4. Discussion

234 The findings of the present study reveal that the distinction between optimal and suboptimal

235 food has a crucial impact on the ascription to the buyers. This impact is more relevant than the

236   type of food category or the accompanying communication. This thus confirms the important

237   effect of both perceived quality and price on consumer perception (Steptoe, Pollard, & Wardle,

238   1995).

239   The results also reveal that the ascription of consumers buying suboptimal food is more

240   homogenous compared to consumers buying optimal food. Consumers buying suboptimal food

241   are characterized as both economic and thrifty as well as frugal and environmental,

242   independently of the communication. These results are in line with earlier results collected with

243   Uruguayan consumers (Aschemann-Witzel et al., 2018), which show that both aspects, the

244   economic motive as well as the environmental motive (Steptoe et al., 1995), are thought of by

245   consumers when seeing suboptimal food.

246   A tendency to think of a risk was found for the fresh suboptimal food, in line with research

247   showing food safety anxiety (Watson & Meah, 2013) and dislike of faults in fresh produce

248   (Jaeger, Machín et al., 2018; Loebnitz et al., 2015). In turn, a tendency to associate

249   inattentiveness was found for optimal food choice. This might indicate that consumers thought

250   the respective other buyer was not paying attention to the price reduction of the suboptimal

251   food.

252   Optimal buyers were ascribed to be fussy, traditional, and successful. This might be explained

253   by the fact that choosing the optimal is the 'normal' and thus traditional choice, compared to

254   the new trend of seeing an offer of suboptimal food in the stores. The appearance of the word

255   "fussy" in relation to optimal choice is interesting, and might indicate that a societal change

256   has taken place, in which choosing the optimal over the suboptimal food is perceived as a

257   negative sign of a kind of excessive pickiness in food choice. At the same time, though, the

258   choice of the ascription "successful" could have something to do with the higher price and

259   status of the optimal product. The greater heterogeneity in the choice of ascriptions might

260 underline that how optimal food choice should be understood, is not well-aligned among the

261 consumers.

262 The theory of self-image congruity applied to the food domain (Vanhonacker, Lengard,

263 Hersleth, & Verbeke, 2010) suggests that a consumer of suboptimal food may report a strong

264 congruence between their own self-image and their ascriptions of other suboptimal food

265 consumers. Findings confirm that the own concern or traits are projected onto the other buyer,

266 and similar motives ascribed to that person.

267

5. Conclusions and implications

269 We can conclude on a number of findings from the study. Firstly, suboptimal food is associated

270 with both economical and thrifty as well as frugal and environmental motives. Secondly,

271 consumers ascribe their own motives to others when observing suboptimal food purchases.

272 Thirdly, we find that optimal food choice, in turn, is perceived more heterogeneously, with

273 both positive and negative ascriptions, ranging from successful, to fussy and traditional.

274 The findings from the present study imply that stores offering suboptimal food should expect

275 this to have a strong signalling influence. Suboptimal food can signal and be associated with

276 both economic and environmental issues. Therefore, stores should design their presentation

277 and communication of the suboptimal food items in line with the customer group

278 characteristics, since a similarity or match between the specific traits of the customer group

279 and the aspects associated with suboptimal food may enhance consumers' inclination to buy

280 such food. Thus, if the key consumer segment can be assumed to be more value conscious than

281 environmentally concerned, suboptimal food may be advertised primarily using price reduction

282 communications and communication strategies highlighting the money saving elements

283 connected to consuming such food. If, on the contrary, the target group of consumers can be

284 thought of as environmentally concerned but not necessarily price conscious, it may be more

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285 efficient to advertise in-store offers of such food items using communications emphasizing the

286 environmentally beneficial properties of purchasing sub-optima food. Stores should design

287 their presentation and communication of the suboptimal items in line with the customer group

288 characteristics, and can expect that such food offers will trigger positive individual

289 characteristic associations among their customers.

290

291 **Table 1. Sample and measure characterization per country**

	NL	DE	SE	NO	DK
Sample size (n)	623	621	620	625	609
Share of gender, female (%)	49.5	48.6	49.3	49.0	50.0
Age in years (mean /SD)	47.9	47.1	47.9	45.3	49.2
	(16.5)	(14.7)	(16.2)	(15.2)	(16.5)
Education, higher (%)	35.5	24.3	33.1	57.6	54.0
Environmental concern	4.48	4.78	4.86	4.46	4.62
Value consciousness	4.88	5.19	4.95	4.60	4.66

292 *Notes*. NL = The Netherlands, DE = Germany, SE = Sweden, NO = Norway, DK = Denmark.

293 If not indicated otherwise, the mean is given for the psychographic variables.

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Table 2. Experimental design

	Control	Price reduction communication	Personal communication
Fresh food	Optimal item	Optimal item	Optimal item
	Suboptimal item	Suboptimal item	Suboptimal item
Packaged food	Optimal item	Optimal item	Optimal item
	Suboptimal item	Suboptimal item	Suboptimal item

Notes. n = 3098. In each cell, half of the respondents were told the other person has a male, and the other half that the other person has a female name.

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299 **Table 3. Measure and variable characterisation, ascription to the buyer**

Variable	Question / Item and scale	Chosen (%)
Ascription to the buyer	Imagine you meet someone you know at the [supermarket / farmers market] – [female/male name]. [female/male name] is buying this product [the optimal /suboptimal] right now. What does this tell you about [female/male name]? Please select as many of the following descriptions as you think fit to [female/male name]. 1. Environmentally oriented 2. Caring 3. Social 4. Stingy 5. Fussy 6. Cheap 7. Thinks very economical 8. Efficient 9. Successful 10. Traditional 11. Frugal 12. Thrifty 13. Risky 14. Careless 15. Inattentive [check all that applies question, yes/no for each word]	1. 32.8 2. 14.4 3. 11.0 4. 4.1 5. 13.4 6. 2.0 7. 39.4 8. 14.8 9. 9.5 10. 28.3 11. 23.1 12. 33.9 13. 4.4 14. 6.0 15. 9.3

300 *Notes*. n = 3098.

Table 4. Measure and variable characterisation, environmental concern and value consciousness

Variable	Question / Item and scale	Mean (SD)
Environmental concern	To what extent do you agree or disagree on these statements? It is important to me that the products I use do not harm the environment. I consider the potential environmental impact of my actions when making many of my decisions. My purchase habits are affected by my concern for our environment. I am concerned about wasting the natural resources of our planet. I would describe myself as environmentally responsible. I am willing to be inconvenienced in order to take actions that are more environmentally friendly. 1 = strongly disagree 7 = strongly agree	4.64 (1.28) Cronbach alpha =.926
Value consciousness	To what extent do you agree or disagree on these statements? I am very concerned about low prices, but I am equally concerned about product quality. When grocery shopping, I compare the prices of different products to be sure I get the best value for the money. I always check prices at the grocery store to be sure I get the best value for the money I spend. 1 = strongly disagree 7 = strongly agree	4.86 (1.30) Cronbach alpha =.700

Notes. n = 3098.

304 **Table 5. Frequency of use (%) of the terms of the CATA questions related to ascriptions to the buyers of (sub-)optimal food under**
305 **different communications for fresh and packaged food categories**

Product and communication	Environmentally oriented	Caring	Social	Stingy	Fussy	Cheap	Thinks very economical	Efficient	Successful	Traditional	Frugal	Thrifty	Risky	Careless	Inattentive
Packaged Optimal Price	12.8[a]	15.7[a]	9.5[ab]	1.7[ab]	21.5[b]	0.4[a]	16.5[a]	15.7[ab]	19.8[d]	38.4[b]	16.1[ab]	17.4[a]	2.1[ab]	9.5[a]	14.0[bcd]
Packaged Optimal Personal	18.0[a]	16.8[a]	11.2[ab]	1.2[a]	26.4[b]	0.4[a]	14.4[a]	12.8[ab]	16.4[cd]	39.6[b]	14.0[a]	14.8[a]	1.6[a]	7.6[a]	12.0[bcd]
Packaged Optimal Control	15.4[a]	15.0[a]	11.2[ab]	3.4[abc]	24.0[b]	1.9[a]	17.6[a]	12.7[ab]	15.4[cd]	41.6[bc]	16.9[abcd]	15.4[a]	3.4[abc]	6.7[a]	13.9[cd]
Packaged Suboptimal Price	50.7[bc]	14.2[a]	13.4[ab]	6.0[abc]	3.4[a]	2.2[a]	72.4[c]	12.3[ab]	3.0[a]	8.2[a]	37.3[e]	62.3[c]	3.4[abc]	3.0[a]	5.2[abc]
Packaged Suboptimal Personal	65.0[c]	17.1[a]	16.0[b]	5.7[abc]	3.8[a]	1.5[a]	65.0[bc]	15.2[ab]	6.1[abc]	7.6[a]	34.6[e]	62.7[c]	3.4[abc]	3.8[a]	2.3[a]
Packaged Suboptimal Control	48.4[bc]	15.2[a]	14.0[ab]	10.0[c]	4.8[a]	4.4[a]	64.4[bc]	15.2[ab]	5.6[ab]	8.8[a]	33.2[de]	67.6[c]	6.8[abc]	3.2[a]	6.4[abc]
Fresh Optimal Price	13.4[a]	13.8[a]	7.1[ab]	1.5[ab]	22.4[b]	1.1[a]	14.6[a]	20.5[b]	12.7[bcd]	52.6[bc]	13.1[a]	9.3[a]	2.2[ab]	4.5[a]	16.0[d]
Fresh Optimal Personal	10.7[a]	11.1[a]	6.2[ab]	1.0[a]	22.8[b]	2.1[a]	19.4[a]	17.3[b]	10.4[bcd]	53.3[c]	12.1[a]	7.3[a]	1.4[a]	6.6[a]	10.0[bcd]
Fresh Optimal Control	11.6[a]	9.5[a]	5.8[a]	4.6[abc]	23.2[b]	2.1[a]	17.8[a]	22.4[b]	12.9[bcd]	56.4[bc]	18.3[abc]	10.4[a]	1.7[a]	6.6[a]	11.2[bcd]
Fresh Suboptimal Price	50.2[bc]	12.3[a]	12.3[ab]	4.8[abc]	3.3[a]	4.5[a]	63.6[bc]	13.8[ab]	4.8[ab]	10.0[a]	27.9[bcde]	52.8[bc]	8.6[bc]	6.3[a]	4.5[ab]
Fresh Suboptimal Personal	48.3[b]	18.4[a]	12.0[ab]	2.1[ab]	1.3[a]	1.3[a]	54.7[b]	7.7[a]	5.1[ab]	10.7[a]	25.2[abcde]	39.3[b]	7.7[abc]	5.1[a]	6.8[abc]

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| Fresh Suboptimal Control | | 49.1[bc] | 13.9[a] | 13.2[ab] | 7.7[bc] | 3.7[a] | 1.8[a] | 50.2[bc] | 11.7[ab] | 4.0[ab] | 10.6[a] | 28.9[cde] | 45.8[bc] | 10.6[c] | 8.4[a] | 8.8[abcd] |

306 Note: Multiple pairwise comparison tests (McNemar) for each CATA term are included in the cells. Cells of the same column that do not share an identical letter (a, b, c, d or
307 e) show significantly different frequencies.

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308 **Figure 1. Example of the presentation of the choice in the experimental survey**

309 *Notes*. Example above from Norway, bread category, communication price reduction,
310 example in the middle from Germany, potato category, personal communication, and below
311 from The Netherlands, bread category, personal communication. Respondents were assessing
312 the choice of optimal versus suboptimal food, as shown above, in the earlier part of the
313 survey. In the data analysed here, they saw either the optimal or the suboptimal offer again
314 (of the same food category and with the same communication), and told that they observe
315 someone choosing this item.

316 **Figure 2. Projection of ascriptions to the buyers of fresh (*Fresh*) versus packaged (*Pack*)**

317 **food categories, for suboptimal or optimal food (*Sub or Opt*) under different**

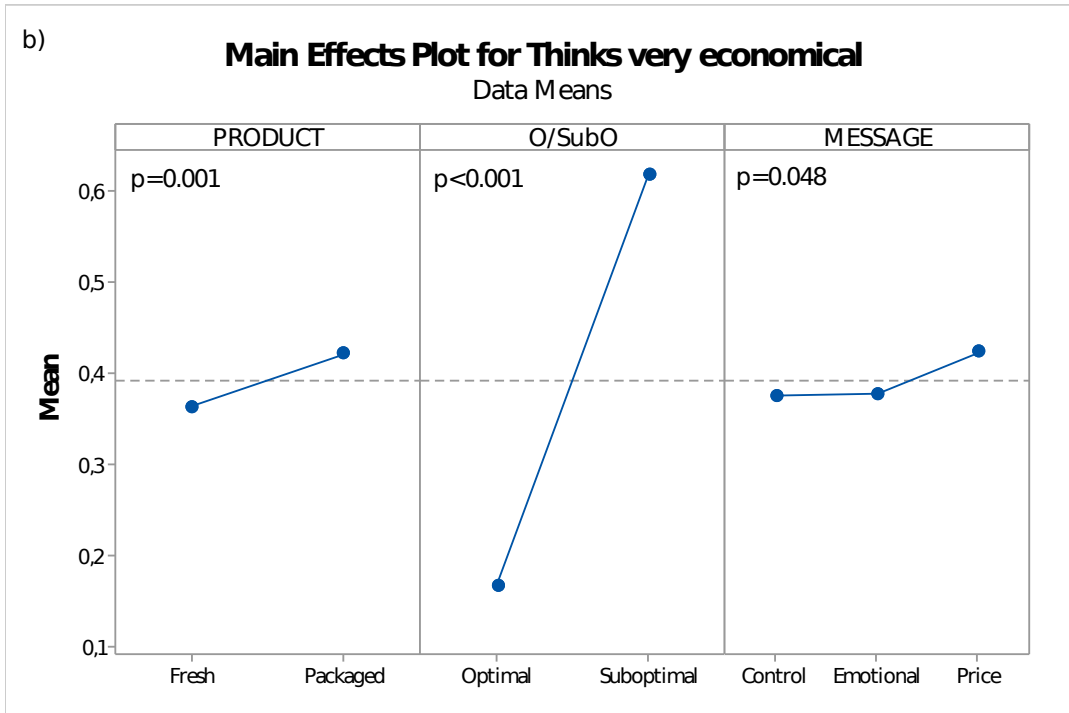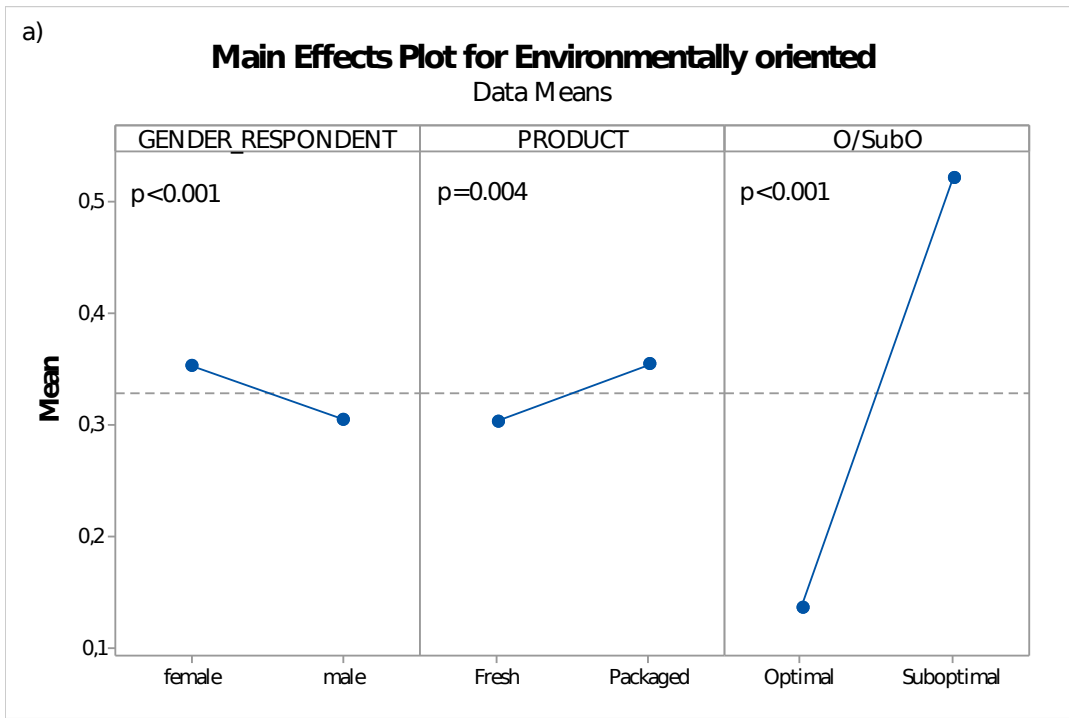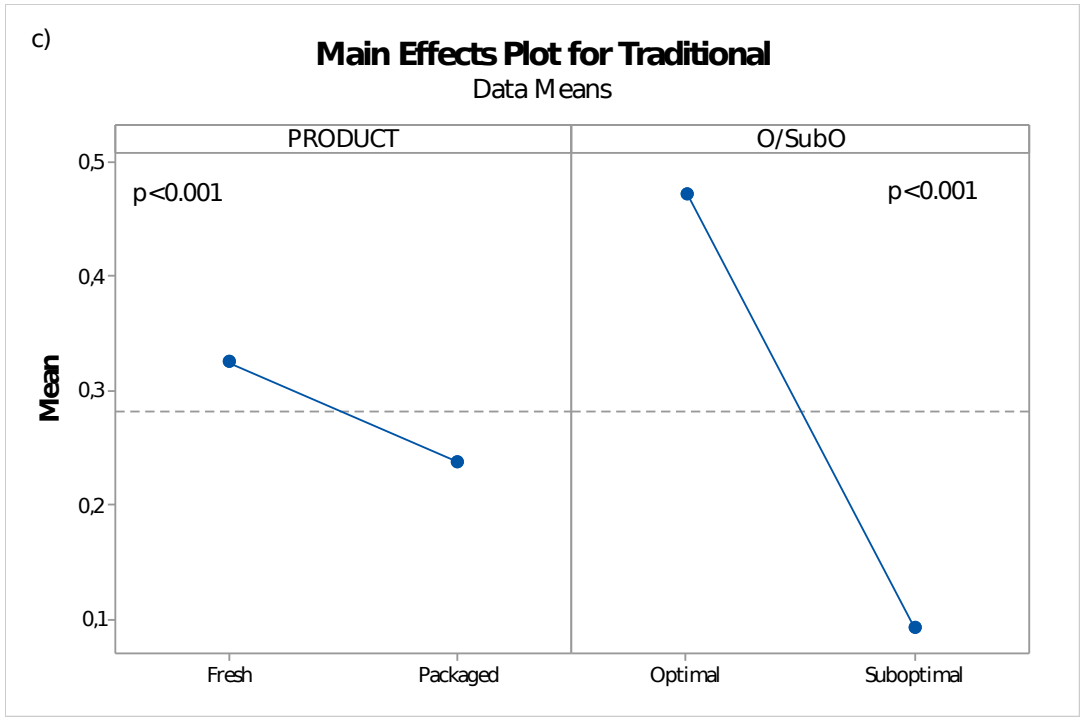318 **communication communications (*Price, Personal/Emotional or Control*)**
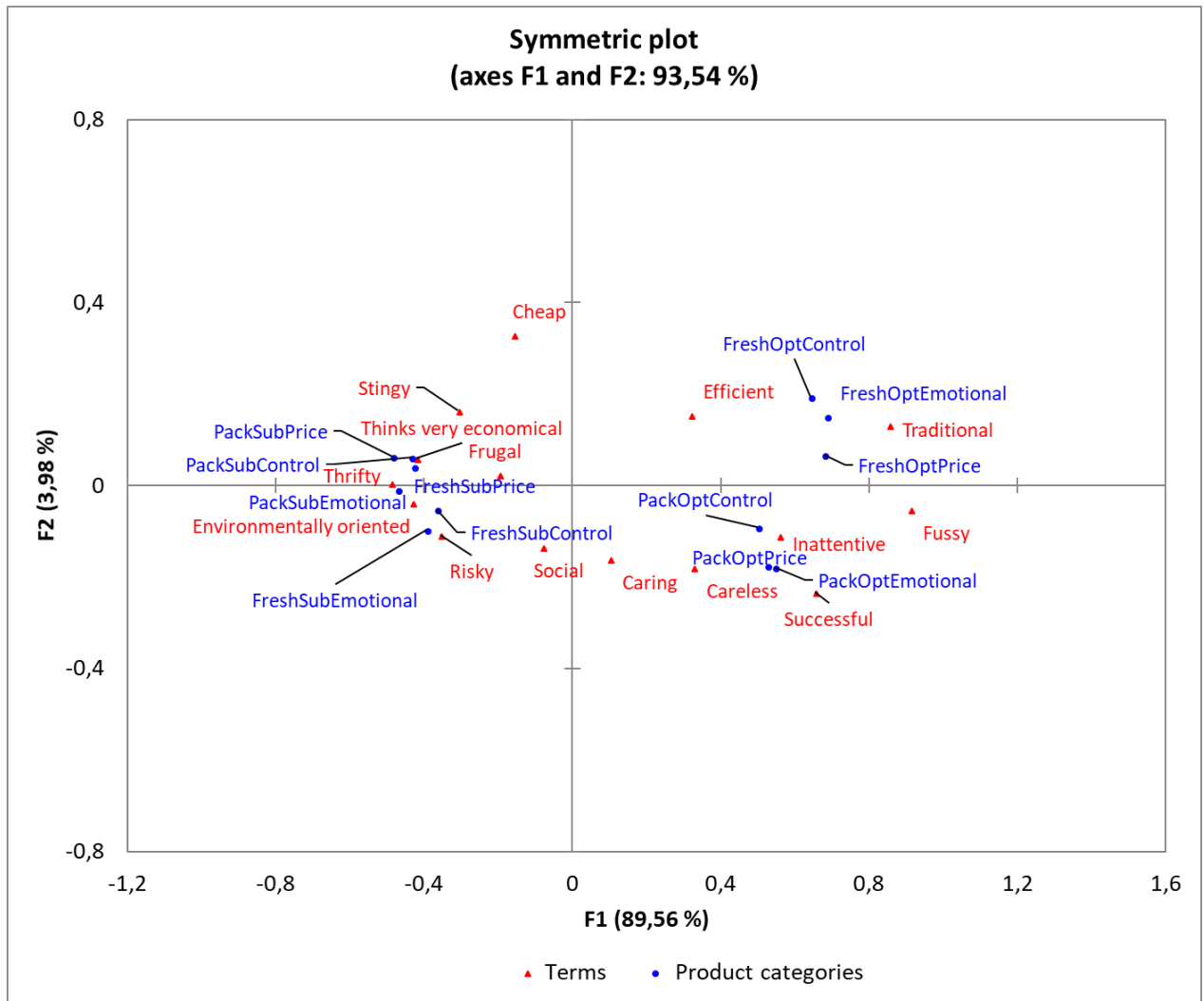
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Symmetric plot
(axes F1 and F2: 93,54 %)

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321 **Figure 3.** Significant differences in buyer personality ascriptions according to respondent

322 gender, product type, sub-optimality and communication communication for attributes a)

323 "Environmentally oriented", b) "Thinks very economical" and c) "Traditional"

a) **Main Effects Plot for Environmentally oriented**
Data Means

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b) **Main Effects Plot for Thinks very economical**
Data Means

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c)

**Main Effects Plot for Traditional**
Data Means

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328 **Figure 4.** Top: Participants' responsibility perceptions of a person consuming suboptimal (vs.

329 optimal) food, depending on their level of environmental concerns (low, high); Bottom:

330 participants' price sensitivity perceptions of a person consuming suboptimal (vs. optimal) food,

331 depending on their level of value consciousness (low, high)
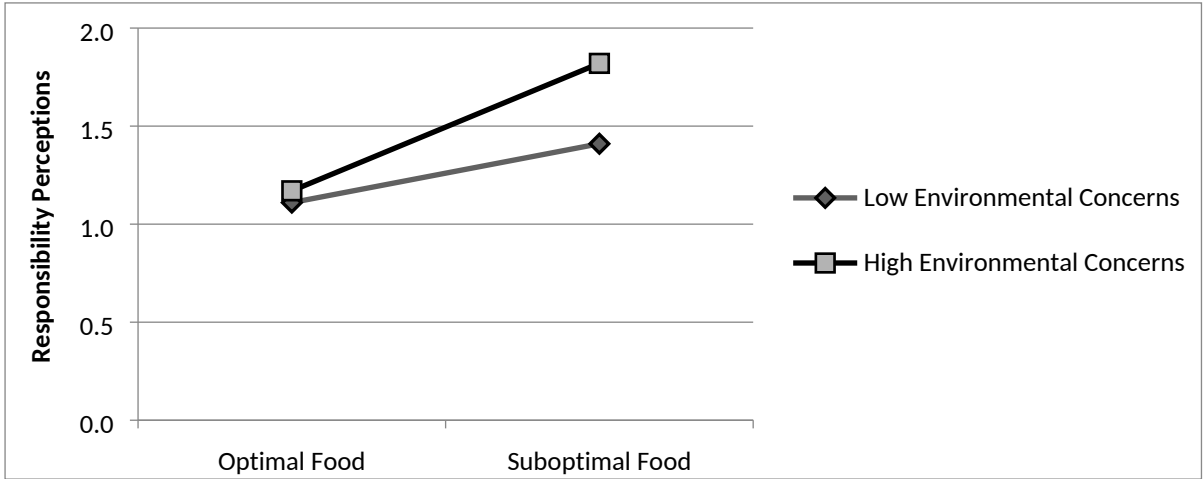
332
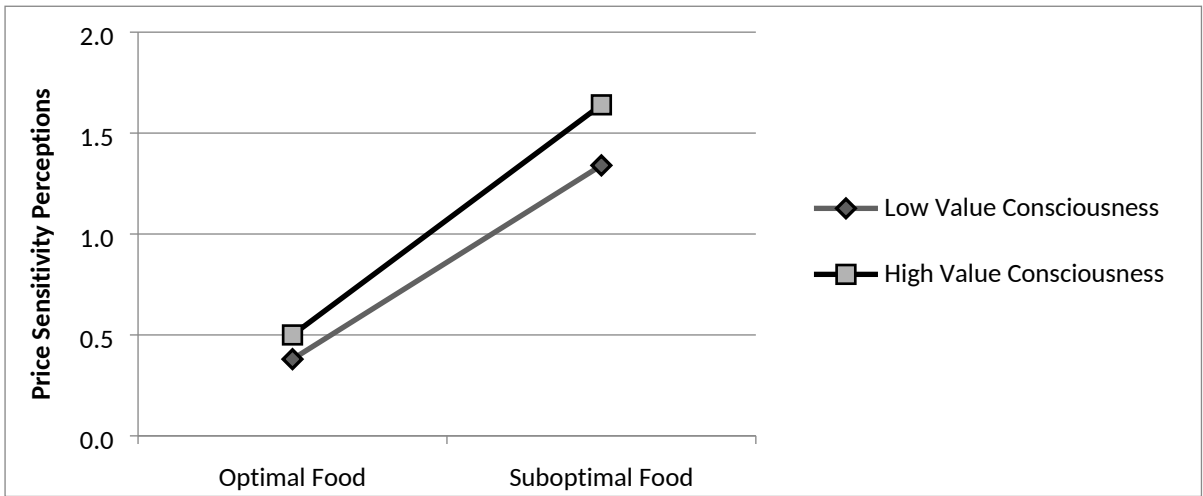
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