

1 **TITLE:** Institutional Trust, Risk and Product Safety: A consumer survey

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ABSTRACT

This study aims to expand our understanding of institutional trust by examining how consumers express their trust in a UK product safety regulator, Office of Product Safety and Standards (OPSS). It uses publicly available data from two waves of nationally representative surveys (N = 20,527) conducted by OPSS between November 2020 and August 2021. Questions were selected for analysis if they aligned with the organisation’s definition of a trusted regulator: protecting people and places, and empowering people to make good choices. Of the 211 survey items in Wave 1 and 150 in Wave 2, 42 pairs of questions were selected. Only 11 of the 42 analyses were statistically significant, and of those only two were interpretable at a reliable statistical threshold (i.e., medium effect size threshold). The results are valuable in demonstrating how institutional trust may be affected by product safety-related behaviours, experiences, beliefs and attitudes concerning risk they are potentially exposed to. However, the general lack of reliable findings also highlights methodological challenges in the way official government surveys investigate institutional trust, risk, and general product safety issues on both a linguistic and conceptual level. By examining the survey results and the survey itself, we show how empirical and theoretical insights can inform government efforts to capture important phenomenon.

43 1. INTRODUCTION

44 In 2017, a fire broke out in a high-rise block of flats on Grenfell Road in London which
45 claimed 72 lives. An inquiry concluded that the fire was caused by a malfunctioning fridge-
46 freezer but it spread due to combustible cladding. In the wake of this tragedy, the government
47 established the Office for Product Safety and Standards (OPSS) housed within the UK
48 Government Department of Business, Energy and Industrial Strategy (BEIS). The purpose was
49 to have a dedicated regulatory body that ensured the safety of all consumer products (except
50 food, medicine, and vehicles) against established standards and laws. The main activities of
51 regulators like OPSS include communicating product safety information, establishing effective
52 regulations for businesses, and enforcing these regulations. An objective specific to OPSS,
53 however, is to be a trusted product regulator (OPSS 2022).

54 The reason trust is important for OPSS is because they regulate a wide remit of products
55 that present a range of possible consumer health and safety issues as well as risks that they are
56 exposed to. According to media reports, other products that pose a risk aside from white goods
57 (e.g., fridges, freezers, washing machines) include construction products (e.g., building
58 materials) fireworks, button batteries and small magnets. On several occasions, both batteries
59 and magnets have been swallowed by young children leading to serious complications, such as
60 perforation of the bowel, and even death (Child Accident and Prevention Trust, 2022). There
61 are two additional reasons public trust in a product safety regulator is important. First,
62 regarding the current social context, technological advances, and more recently COVID-19,
63 mean that consumers are increasingly removed from physical retailers (e.g., bricks and mortar
64 stores) where they can inspect products for themselves. Given they can't evaluate safety issues
65 before they buy products, the public have to trust that the wider product safety system will
66 protect them from any harm from the risks they might be exposed to. Second, not only are
67 safety issues rarely salient to consumers, but information is also difficult to understand (Six &
68 Verhoest, 2017). For example, technical expertise is often required to gauge the safety of
69 certain products, such as white goods or electrical items. The public is therefore reliant on
70 communication from the regulator if they are to successfully navigate the safety issues they
71 might be exposed to (Earle & Cvetkovich, 1995). In fact, parallel work on food safety, by
72 Löfstedt (Löfstedt, 2003a, 2003b, 2005, 2006; Osman, Heath, Löfstedt, 2018; Wardman &
73 Löfstedt, 2018) has made considerable advances in the understanding of the relationship
74 between communication from regulators regarding food safety incidents. As well as this, the
75 work by Löfstedt (e.g. Löfstedt, 2003a, 2003b; Osman et al., 2018; Wardman & Löfstedt, 2018)

76 has help to reveal the complex relationship between institutional trust, and the impact on risk
77 perceptions, and practical strategies to use and avoid in tempering alarm regarding perceived
78 risks.

79 Given the lack of work on citizen trust in regulators (Six & Verhoest 2017), particularly
80 regarding consumer product safety, this research uses OPSS as a case study to explore how a
81 regulatory body fulfils their strategic goals in relation to trust. Results shed light on how
82 institutional trust relates to citizen behaviours, experiences, beliefs and attitudes in the context
83 of product safety. Yet, an analysis of the survey itself based on the theoretical literature also
84 informs how efforts to measure institutional trust can be improved.

85 **1.1. Theoretical background**

86 According to OPSS, becoming a trusted regulator means: (1) protecting people and places; (2)
87 enabling businesses to thrive; and (3) empowering consumers to make good choices (OPSS
88 2022). The focus here will be on (1) and (3) as these pertain to citizens rather than businesses.
89 Comparing their definition with those from the literature raises three theoretically important
90 points in terms of measuring citizen trust in an organisation in OPSS. The first relates to the
91 base of trust, the second concerns the nature of trust and the last discusses the process of
92 trusting.

93 When people trust in an institution, this is an example of institutional trust (PytlikZillig &
94 Kimborough., 2016) which comprises benevolence, competence and integrity (Li, 2007).
95 Benevolence refers to whether OPSS act in the public's best interests, competence is akin to
96 expertise and refers to their ability to perform tasks, and integrity refers to whether they are
97 honest, transparent and sincere in how they communicate with the public (Grimmelikhuijsen
98 et al., 2013). Institutional trust is depersonalized and contrasts with interpersonal trust which
99 is personalized (Li 2016). This difference raises the question as to whether it is even possible
100 to trust in an institution like OPSS. Bornstein and Tomkins (2015) assert that trust requires a
101 specific target, and so it is only possible to speak of institutional confidence rather than trust.
102 Equally, Cao (2015) believes the public can only trust employees of the institution rather than
103 the institution itself because the employee-public relationship contains relational features
104 required for trust unlike the institution-public relationship. Conversely, PytlikZillig and
105 Kimborough (2016) draw on Waytz et al. (2010) to highlight our tendency to
106 anthropomorphize abstract entities thus reintroducing the possibility of institutional trust. In
107 other words, the specificity of the target is important when measuring trust, e.g., 'OPSS' rather

108 than simply ‘British Government’, but Grimmelikhuijsen and Knies (2017) point out that such
109 accuracy is rare, and researchers often opt for generic entities.

110 Regarding the nature of trust, Porumbescu (2015) observes that social scientists often
111 define trust according to Rousseau et al.’s (1998: 395) definition: “a psychological state
112 comprising the intention to accept vulnerability based upon positive expectations of the
113 intentions or behaviour of another.” Yet, research has gone further to tease apart cognitive and
114 affective trust whereby the former focuses on evaluations while the latter centres on emotions.
115 PytlikZillig and Kimborough (2016) note that it is contentious as to whether these are indeed
116 separate types of trust (e.g., Hardin 2006; McAllister 1995) or whether trust involves both
117 affective and cognitive components (Grimmelikhuijsen 2012; Lewis & Weigert 1985;
118 Möllering, 2006; Nooteboom, 2006). For instance, some scholars claim affective trust in the
119 government is not possible because this is a form of institutional trust which is depersonalised.
120 (Falkner 2018; Hardin 2006)

121 Both affective and cognitive trust fall under trust-as-attitude which can be distinguished
122 from trust-as-choice (Li, 2007; Li, 2015). Trust-as-choice views trust as a decision, rather than
123 simply a willingness, to accept vulnerability. The importance of this distinction lies in the
124 measurement of genuine trust-building between the public and the regulator. Trust-as-attitude
125 is lower risk than trust-as-choice because it involves holding an attitude and does not demand
126 any actionable commitment. As a result, both vulnerability and uncertainty are also lower,
127 which removes the conditions required to establish an exchange mode - the foundation of
128 building trust (Möllering, 2006; Li, 2007). Conversely, trust-as-choice is high risk because it
129 involves a decision to trust which increases both vulnerability and uncertainty. The “leap of
130 faith” that requires the trustor to suspend their vulnerability and uncertainty *as if* they were
131 resolved is what provides the opportunity to build trust (Möllering, 2006: 111). To determine
132 whether OPSS is fulfilling its goal of being a trusted regulator, it is more useful to examine
133 behavioural decisions to trust than trusting attitudes, e.g., consumers making good choices
134 because they feel empowered. OPSS regularly conduct public surveys to capture the product
135 safety landscape, specifically general consumer understanding of safety issues, attitudes and
136 experiences with common and novel products. Indeed, surveys typically measure trust-as-
137 attitude rather than trust-as-choice (Möllering, 2019), but if attitudes alone are interpreted as
138 evidence of trust, this may overlook the crucial leap of faith required for genuine trust building.
139 Without measuring the behavioural decisions underpinning trust, OPSS will be unable to
140 determine whether the objectives are being achieved and address product safety problems.

141 Relatedly, according to Möllering (2013), trust is better understood as a process and it's
 142 more appropriate to speak of 'trusting' than its static counterpart 'trust'. This qualifies the
 143 earlier distinction between trust-as-choice and trust-as-attitude, which both capture trust at a
 144 specific point in time when decisions to trust and trusting attitudes can, in fact, fluctuate.
 145 Viewing trust as a process also has repercussions for measurement. In his work on trusting
 146 during crises, such as the pandemic in which this data was captured, he views trust as less an
 147 outcome about *how much* people trust and more *how* people trust. Given OPSS regulates a
 148 wide array of products, and people typically purchase at least one of the regulated products
 149 regularly, such as cosmetics, baby products or clothes, then each transaction is a decision to
 150 trust in the relevant actors that the product is safe (e.g., retailer, manufacturer, OPSS, friends
 151 and family). Trust therefore has the potential to shift over time, which coincides with wider
 152 work on bureaucratic reputations that are dynamic and multidimensional (e.g., Capelos et al.
 153 2016).

154 **1.2. Regulatory trust**

155 The relationship between trust and regulators has thus far been examined in the context of food
 156 (Berg, 2004; Brom, 2000; Chou & Liou, 2010; Jonge et al., 2008; Lobb et al., 2007; Omari et
 157 al., 2017), healthcare and pharmaceuticals (Bauchner & Fontanarosa, 2013; Brown & Calnan,
 158 2012; Heimer & Gazley, 2012), finance (Gillespie & Hurley, 2013; Murphy, 2004; Nienaber
 159 et al., 2014), and automobiles (Khastgir et al., 2018). There are far fewer studies that focus on
 160 regulatory trust in relation to other common consumer products that can expose the populous
 161 to varying levels of harm. Therefore, this lack of research offers a strong motivator for the
 162 present study, along with the social and contextual factors discussed at the outset.

163 Six and Verhoest (2017) reviewed 33 empirical studies of trust across eight types of
 164 regulatory relationships between citizens, private regulators, public regulators, public
 165 organizations, private/3rd sector organisations and other public regulators (e.g., Gouldson 2004;
 166 Heimer & Gazley 2012; Thiers 2002). Of primary relevance here is citizen trust in a public
 167 regulator, but there was only one study conducted in a British context (Walls et al., 2004). Six
 168 and Verhoest (2017) found that the relationship between a public regulator and citizens is
 169 understudied but they do reference Walls et al. (2004) who conducted interviews to investigate
 170 how the public perceived the Health and Safety Executive (HSE) and Her Majesty's Railway
 171 Inspectorate (HMRI). Trust was high in the former, but low in the latter, even though the two
 172 are institutionally linked, and public awareness of both regulators was generally low. HMRI,
 173 was victim to negative perceptions of the entire UK rail system due to poor service and

174 infrastructure as well as damaging media portrayals following a series of high-profile railway
175 accidents. In other words, independence between the regulator and the wider system is
176 important for trust. Conversely, participants did not mention the relationship between the
177 highly trusted HSE and the government, suggesting that trust in this regulator was *not* fuelled
178 by perceptions of independence. The authors also found that Government Ministers received
179 the lowest trust ratings while the Department of Health and Environment were highly trusted,
180 which, they argue, further highlights the gap between trust in specific departments and
181 professional politicians. The low ranking of government more broadly aligns with recent work
182 by Ipsos, a market research company which found that out of 30 professions (e.g., doctors,
183 journalists, bankers, teachers, armed forces, scientists), government ministers (19%), and
184 politicians generally (19%), were the least trusted to tell the truth after advertising executives
185 (16%) (Ipsos MORI 2021).

186 In another study, Walker et al. (1998) found that independence from the government was a
187 driving factor of trust in HSE because it signalled that this regulator was acting in the public's
188 best interest. Other instances where regulators have suffered by association is during the BSE
189 or 'mad cow' crisis in the 1990s whereby public trust in food regulators decreased (Wales et
190 al., 2006; Phillips et al., 2000). Interestingly, (e.g. Löfstedt, 2005) study on scandals, such as
191 the BSE crisis, found that the public did not place their trust in regulators or politicians but
192 'unbiased' consumer groups and non-governmental organisations (NGOs). This was supported
193 by Poortinga et al. (2004) who also found that consumer groups were highly trusted compared
194 with government ministers following the foot and mouth outbreak in 2001. While the Food
195 Standards Agency and the Ministry of Agriculture were trusted far more than government
196 ministers, people still wanted an independent source for reliable information.

197 The discussion thus far relies on the premise that institutional trust is the default goal for a
198 regulator like OPSS. From a political perspective, trust secures compliance which is required
199 for an efficient government (Lenard 2007), and Falkner (2018) goes as far to say that trust is
200 required for societal function. On the other hand, some believe trust is naïve and risky because
201 it can lead to an absence of control (Parry 1976) or lacks reason or reflexivity (Möllering,
202 2006). In this way, distrust is rational and keeps citizens engaged with the political landscape,
203 which then ensures the government remain responsive rather than becoming complacent.

204 Taken together, product safety has gained importance in recent years and the current
205 climate amplifies this urgency. This study therefore addresses the broad absence of studies on
206 citizen trust in regulators, specifically one that functions to increase the safety in household

207 products. To do so, it will examine how OPSS measures institutional trust in relation to the
208 strategic goals of protecting people and places, and empowering people to make good choices.
209 Data is analysed from two waves of nationally representative surveys, but before turning to the
210 methodology, the hypotheses will be outlined.

211 **1.3. Hypotheses**

212 Hypotheses were formulated regarding associations between the answers of different pairs of
213 questions. Some were motivated by extant literature, for example, in Wave 1, one question
214 asked: ‘Of the following types of organisations, in general, how trustworthy or not do you think
215 each are in how they operate towards you?’ Participants then had to answer this question with
216 respect to eight organisations, four of which pertained to the broader product safety landscape
217 (government, local government, consumer protection bodies, non-governmental organisations
218 (NGOs)). Another question, which was relevant only to respondents who reported that they
219 experienced a safety issue with a product, asked: ‘To what extent do you agree or disagree with
220 the following statement about the safety issue you had with the following product (respondents
221 were assigned a product with which that reportedly had a safety issue): I understand my legal
222 rights and responsibilities correctly.’ Previous work has found that citizen trust in consumer
223 groups and NGOs was higher than government and local government, and citizens sought
224 information from independent, more reliable sources (e.g. Löfstedt, 2005; Poortinga et al.,
225 2004; Walls et al., 2004). Moreover, Slovic (1997) argues that a lack of trust is the reason that
226 risk communication is ineffective. Therefore, while the relationship between trust and
227 understanding one’s legal rights and responsibilities has not been explicitly examined, it was
228 hypothesised that there would be an association between this pair of questions, such that people
229 who have high trust in consumer groups and NGOs perceive that they understand their legal
230 rights and responsibilities correctly more than those who have low trust in these organisations.

231 Elsewhere, there was an absence of robust evidence to formulate predictions, but
232 research questions were still regarded as informative. For instance, one question asked: ‘Which,
233 if any, of the following most influence you having trust in a product being safe,’ with options
234 including: price, look and feel, previous experience, recommendations from friends and family,
235 online reviews, manufacturer name, retailer name, kitemark, UK safety framework, and
236 warranty. Another question asked: ‘For the following question, please imagine you owned a
237 product which had broken and was no longer operating correctly. How likely, if at all, are you
238 to do each of the following things: Attempt to repair it myself.’ It would be highly insightful
239 to understand what factors affect trust in the safety of a product among those who are more

240 likely to attempt to repair the product given the risks involved. On the one hand, those who
241 select interpersonal factors such as online reviews or recommendations from friends and family
242 may be more likely to attempt a repair than those who do not select these factors, because they
243 can easily elicit information on how to execute the repair. On the other hand, they may be less
244 likely to do so because they are also exposed to conflicting advice on how to do the repair
245 which makes it difficult to know which precise review or recommendation to trust. As we detail
246 in the next section, all pairs of questions analysed are outlined in Appendix A.

247

248 **2. Materials and methods**

249 **2.1. Material**

250 The data analysed was from two waves of the Product Safety and Consumer Survey conducted
251 by OPSS from 17th to 30th November 2020, and 17th May to 15th June 2021. The surveys are
252 designed for the purposes of monitoring consumer awareness and attitudes to safety issues
253 regarding household products that OPSS regulates. The main objective is for OPSS to gain
254 insight into general consumer understanding of safety issues, as well as examining attitudes
255 and experiences with common and novel products. Both waves involved data collection via
256 online presentation of the survey, as well as telephone surveys, and supplemented with data
257 from focus groups. This report will concentrate on the online surveys of both waves. Wave 1
258 comprised 211 questions, Wave 2 comprised 150 questions, and 42 pairs questions were
259 analysed across both waves. Due to different sample sizes and demographics, the questions in
260 each pair were from the same wave. Both waves focused on ‘core’ questions around product
261 safety (e.g., product registration) as well as ‘topical modules’ on product safety (e.g., cosmetic
262 products) and purchase safety (e.g., online purchases)¹.

263 **2.2. Participants**

264 Wave 1 comprised 10,230 participants and Wave 2 comprised 10,296 participants. The sample
265 was drawn from a YouGov panel of 1.8 million people. They are recruited through active
266 sampling from a range of sources (e.g., websites and standard advertising), and their
267 methodology ensures each participant has been screened by YouGov. Importantly, the panel is
268 representative according to age, gender, social grade, ethnicity, and education level. Table 1
269 shows a breakdown of the sample by wave.

270

¹ Product registration involves registering details of a product after purchase with the company who sold it so that they can provide technical support to the customer.

271 **Table 1.** Demographics for wave 1 and wave 2

272

	Wave 1		Wave 2		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Total	10230	-	10297	-	20,527	-
Gender						
Male	4910	48%	4770	46%	9680	47%
Female	5320	52%	5526	54%	10846	53%
Age						
16-34	3011	29%	2971	29%	5982	29%
35-54	3522	34%	3562	35%	7084	35%
55+	3697	36%	3763	37%	7460	36%
Social Grade						
ABC1	5450	53%	5794	56%	11244	55%
C2DE	4780	47%	4502	44%	9282	45%

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275 **2.3. Question selection**

276 The first step involved examining the questions to determine which ones probed trust in relation
 277 to two of the three trusted regulator criteria outlined earlier: protecting people and places, and
 278 empowering consumers to make good choices. The third criteria, enabling businesses to thrive,
 279 was not measured in the surveys due to the consumer focus.

280 There was always one trust-related question in each pair to be analysed, and this was
 281 either the independent or the dependent variable depending on the nature of the question. On
 282 other occasions, both questions pertained to trust as in the following pair of questions: (1) ‘Of
 283 the following types of organisations, in general how trustworthy or not do you think each are
 284 in how they operate towards you? UK Government departments, Local government, Non-
 285 governmental organisations, Consumer protection bodies’; (2) ‘I expect a product to be safe
 286 regardless of price’. Trust was also either direct as in (1) or indirect, as in: ‘Which, if any, of
 287 the following marks would you look for when purchasing each of the following types of
 288 product.’ The response options are a range of marks that communicate the safety of a product
 289 in some way. For instance, the CE mark shows that the product meets the safety, health and
 290 environmental protection requirements while a BSI Kitemark indicates that a product has been

291 independently tested on a regular basis and will consistently perform to that quality. Therefore,
292 this question indirectly asks what marks respondents trust before purchasing a product to ensure
293 its safety.

294 This culminated in 42 separate analyses which related to the goal of protecting people
295 and places (Analyses 1-7, Appendix A) and empowering consumers to make good choices
296 (Analyses 8-42, Appendix A). As the same question was sometimes used in more than one
297 analyses, a total of 18 different questions were examined. The sample sizes for each research
298 question varied because some questions were only applicable to a subset of respondents, such
299 as those who experienced a safety issue. For consistency, and as this was an initial wave of
300 analysis, demographic variables were not included in this analysis.

301 **2.4. Analytical procedure**

302 For every question, descriptive statistics were produced in the form of tables with counts and
303 percentages. The former was important when the number in any one cell in the table was low,
304 because using percentages alone would misrepresent the data.

305 Regarding inferential statistics, two types of analysis were conducted. For analyses
306 where both variables were ordinal, an ordered logistic regression was performed in RStudio
307 using the *polr* function and *MASS* package (Venables & Ripley, 2002), and effect sizes were
308 calculated through odds ratios. An odds ratio threshold of 1.68 was established because this is
309 indicative of a small effect size equivalent to Cohen's d 0.2, while 3.47 ($d = 0.5$) suggests a
310 medium effect size and 6.71 ($d = 0.8$) is a large effect size (Chen et al., 2010). Therefore, any
311 odds ratios below 1.68 were not interpreted. Several categorical variables were recoded as
312 ordinal variables, for example, 'How often, if at all, do you set your SMART products to
313 perform activities while you are not present? Always, often, sometimes, rarely, never, don't
314 know'. We will address the handling of 'don't know' responses (DKs) below.

315 Other analyses contained one ordered variable, and one categorical variable where
316 respondents were allowed to select multiple binary yes/no responses. In these cases, a principal
317 component analysis was performed on the latter variable using the *prcomp* function before
318 running a linear regression using the *lm* function. Regressions yielding significant results for
319 the PCAs will be discussed. However, where the factor loadings of the PCA were
320 counterintuitive, an ordinal regression was conducted with each binary variable as an
321 independent variable, and odds ratios interpreted accordingly. All analyses used weighted data
322 as the survey incorporated a survey weight for each respondent to ensure the sample population
323 best reflected the general population.

324 Regarding DK responses, on the one hand, it is possible, but not always, that they are
325 associated with certain demographic characteristics, such as education (Berg 2005; Smith
326 1984). Therefore, according to Gideon (2012), excluding these responses by treating them as
327 missing data may mean the remaining responses are biased. While it depends on the dataset at
328 hand, bias is considered likely if more than 10% of the dataset is missing (Bennett, 2001).
329 Moreover, Gideon (2012) notes that, while it may be easier to remove DK responses, it not
330 only decreases the sample size thereby reducing statistical power, but analytical decisions
331 would be based on convenience. Other scholars argue DKs are a valid response that offer
332 insight into the respondents' state of mind (Manisera & Zuccolotto, 2014). DK responses can,
333 however, be problematic, particularly in the case of ordinal questions. It is possible to recode
334 them as a midpoint, providing one does not already exist in the response options, or impute
335 missing data with substituted values (Denman et al., 2018). Yet, these options depend on an
336 interpretation of the participant's understanding of the phrase 'don't know'. This is tied to a
337 broader debate around the meaning of DK which Nadler et al. (2015) suggests has multiple
338 interpretations ('don't care', 'no opinion', 'unsure', 'neutral', 'equal/both', 'neither'). Given
339 the meaning of this response can vary from question to question, and from individual to
340 individual, a uniform interpretation of DKs threatens the validity of the data (Denman et al.,
341 2018).

342 Out of the final 18 questions, there were six ordinal questions with no DK response
343 option and a midpoint, except one question with no midpoint; six ordinal questions with DK
344 responses, three of which had a midpoint, and five categorical questions with DK responses.
345 The proportion of DKs was 10% or under in 29 analyses, and between 11%-21% in 13 analyses.
346 Owing to the low proportion of DKs in the former group of analyses, these responses were
347 excluded. For the latter analyses, DK responses were also excluded for one of two reasons.
348 First, the variable with the DK option did not contain a midpoint, thereby increasing ambiguity
349 as to whether the response implies a neutral attitude or an inability to access information
350 required to formulate a response (Denman et al. 2018). Second, the variable with the DK option
351 allowed participants to pick up to several options or as many options as they wish. All responses
352 aside from DK violate the assumption of independence because an individual can select
353 multiple options, thus they cannot be treated in a similar manner.

354

355 **3. RESULTS**

356

357

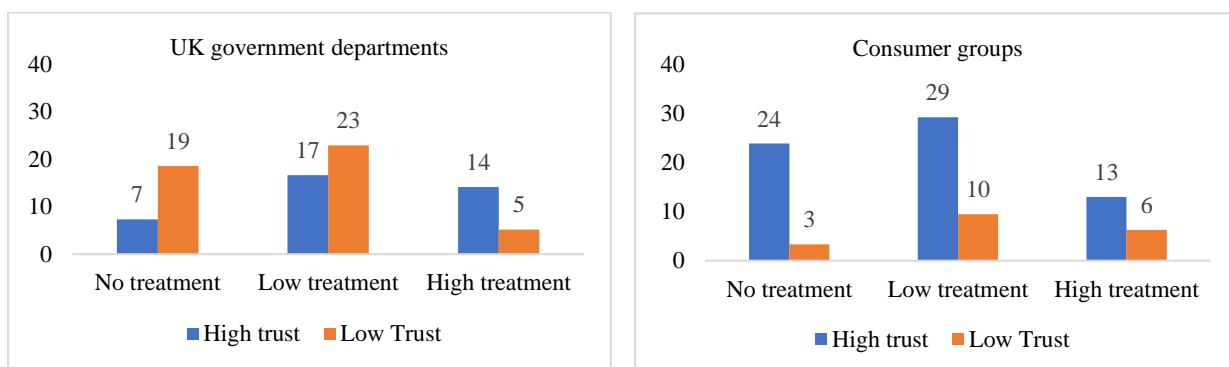
3.1. Protecting people and places

358

Analysis	Variable	Question	Response options
1, 4	DV	You earlier said that a safety issue you had with the following product *respondents assigned product*, resulted in harm to the user. What was the main level of harm experienced?	1 - No aid needed, 2 - First aid needed (e.g., plaster, compression bandage), 3 - Urgent medical attention required (e.g., A&E), 4 - Non-urgent attention required (e.g., GP), 5 - Tertiary medical attention required (e.g., specialist healthcare, prolonged healthcare) , 6 - Don't know/can't recall, 7 - Prefer not to say
	IV	Of the following types of organisations, in general how trustworthy or not do you think each are in how they operate towards you? UK Government departments, Consumer protection bodies	1 - Very trustworthy, 2 - Trustworthy, 3 - Neither, 4 - Untrustworthy, 5 - Very untrustworthy, Don't know
5	DV	You earlier said that a safety issue you had with the following product *respondents assigned product*, resulted in harm to the user. What was the main level of harm experienced?	1 - No aid needed, 2 - First aid needed (e.g., plaster, compression bandage), 3 - Urgent medical attention required (e.g., A&E), 4 - Non-urgent attention required (e.g., GP), 5 - Tertiary medical attention required (e.g., specialist healthcare, prolonged healthcare) , 6 - Don't know/can't recall, 7 - Prefer not to say
	IV	Which, if any, of the following most influence you having trust in a product being safe? (Please select up to three options)	1 - The brand name of the retailer, 2 - The brand name of the manufacturer, 3 - The country of manufacturer/origins, 4 - The warranty/guarantee offered, 5 - The UK government safety framework, 6 - A kitemark/quality trademark, 7 - Online reviews/recommendations, 8 - A previous experience of buying the products, 9 - What the product looks/feels like, 10 - Recommendations from friends/family, 11 - Other, 12 - Don't know, 13 - Not applicable - nothing

359 **Table 2.** Statistically significant analyses examined in relation to protecting people and places

360 Figure 1 shows reported trust in UK government departments and consumer groups by intensity
 361 of treatment required following a safety issue (Analyses 1 and 4 in Table 2). The treatment
 362 condition was collapsed to create three groups: (1) No treatment; (2) Low treatment (First aid
 363 and Non-urgent medical attention); and (3) High treatment (Urgent and Tertiary medical
 364 attention). Trust was collapsed to create two groups: (1) High trust (Very trustworthy,
 365 Trustworthy); (2) Low trust (Very Untrustworthy, Untrustworthy, Neither). Trends reveal that
 366 trust is higher in consumer groups than UK governmental departments, and people generally
 367 required low treatment more than high or no treatment following a safety issue. As reported
 368 trust in consumer protection bodies decreases, the odds of reportedly requiring more intense
 369 treatment following a safety issue with a product increase by 228% (95% CI [0.88, 6.03], $p =$
 370 $.046$). However, as reported trust in the government increases, there is a 353% (95% CI [0.12,
 371 0.66], $p = .002$) likelihood of reportedly requiring more intense treatment.
 372



373
 374 **Figure 1.** Trust in governmental departments and consumer groups by intensity of treatment
 375 required following a safety issue. Counts presented due to the low numbers.

376
 377 A principal components analysis was conducted for Analysis 5 in Table 2, but the principal
 378 components were not immediately intuitive. For example, ‘manufacturer name’ loaded
 379 positively (0.76) onto RC1 while ‘UK Safety Framework’ loaded negatively (-0.51) (Table 3).
 380 As such, a linear regression was used for this analysis. Figure 3 shows the distribution of factors
 381 by required treatment. Of respondents in the No aid group, most selected online reviews (19%,
 382 $n = 14$), whereas of respondents in the Low and High aid group, most selected Previous
 383 experience (16%, $n = 15$) and Recommendations (16%, $n = 6$) respectively. People who select
 384 online reviews are 610% (95% CI [0.06, 0.44], $p = .000$) less likely to reportedly require more
 385 intense treatment following a safety issue with a product than those who do not select this

386 factor. This likelihood decreases but is still significant for people who select manufacturer
 387 name (314%, 95% CI [0.11, 0.91], $p = .017$ and warranty 317% (95% CI [0.10, 0.94], $p = .021$).

388

389 **Table 3.** Principal components for IV in Analysis 5

	RC2	RC3	RC4	RC1	RC5
Previous experience	-0.73	0.12	-0.11	0.13	0.03
Recommendations	-0.62	-0.23	-0.01	0.20	0.11
Country	0.08	0.54	0.04	-0.05	0.16
Online reviews	0.06	-0.76	-0.02	-0.13	0.13
Kitemark	0.20	0.32	-0.42	-0.30	-0.27
Price	0.17	0.01	0.72	0.03	-0.10
Look and feel	-0.02	0.08	0.61	0.10	0.11
UK safety framework	0.36	0.27	-0.28	-0.51	0.17
Manufacturer name	0.12	0.18	-0.13	0.76	0.06
Warranty	0.20	-0.15	-0.10	0.07	-0.83
Retailer name	0.34	-0.22	-0.11	0.34	0.49

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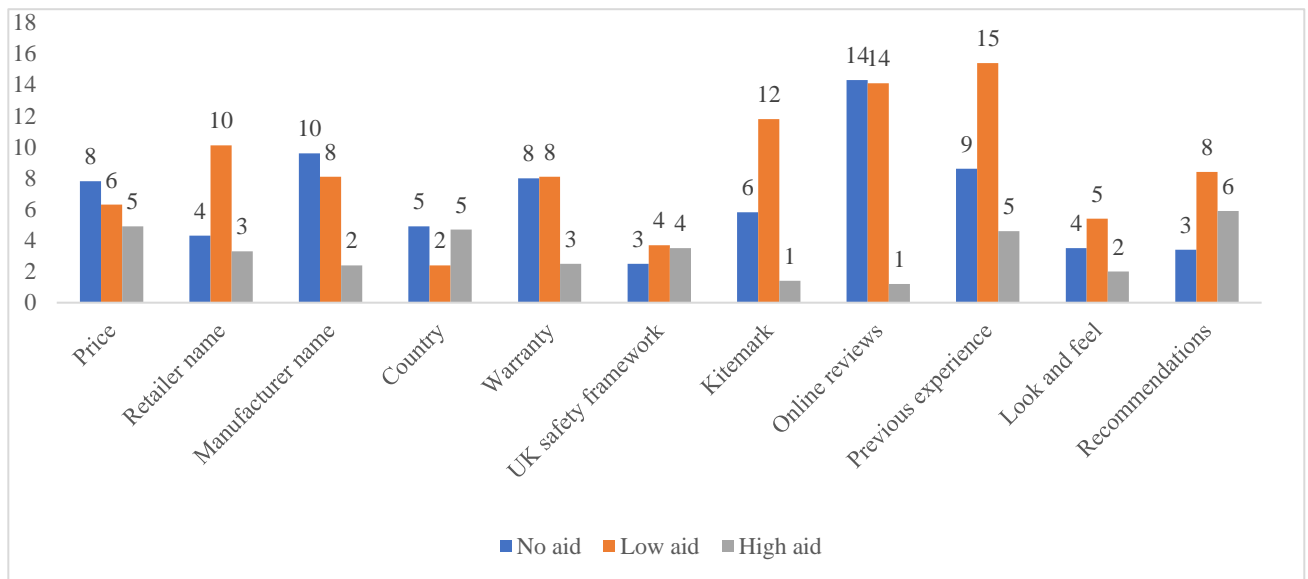
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402 **Figure 3.** Factors influencing trust in the safety of a product by treatment required following a
 403 safety issue in Analysis 5.

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405 3.2. Empowering consumers to make good choices

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Analysis	Variable	Question	Response options	
20-21	DV	To what extent do you agree or disagree with the following statements about the safety issue you had with the following product: ? And today...I understand my legal rights and responsibilities correctly	1 - Strongly agree, 2 - Agree, 3 - Neither, 4 - Disagree, 5 - Strongly disagree	1
	IV	Of the following types of organisations, in general how trustworthy or not do you think each are in how they operate towards you? Office for Product Safety and Standards, BEIS	1 - Very trustworthy, 2 - Trustworthy, 3 - Neither, 4 - Untrustworthy, 5 - Very untrustworthy, Don't know	1
24-25	DV	To what extent do you agree or disagree with the following statements about the safety issue you had with the following product: *respondent assigned product* ? At the time the issue first started: I thought it would be easy to get help to deal with the issue	1 - Strongly agree, 2 - Agree, 3 - Neither, 4 - Disagree, 5 - Strongly disagree	1
	IV	Of the following types of organisations, in general how trustworthy or not do you think each are in how they operate towards you? Office for Product Safety and Standards, BEIS	1 - Very trustworthy, 2 - Trustworthy, 3 - Neither, 4 - Untrustworthy, 5 - Very untrustworthy, Don't know	1
27	DV	How likely would you be to act if a product you owned alerted you via the product of an issue?	1 - Very likely, 2 - Fairly likely, 3 - Fairly unlikely, 4 - Very unlikely. Don't know	
	IV	Which, if any, of the following most influence you having trust in a product being safe? (Please select up to three options)	1 - The brand name of the retailer, 2 - The brand name of the manufacturer, 3 - The country of manufacturer/origins, 4 - The warranty/guarantee offered, 5 - The UK government safety framework, 6 - A kitemark/quality trademark, 7 - Online reviews/recommendations, 8 - A previous experience of buying the products, 9 - What the product looks/feels like, 10 - Recommendations from friends/family, 11 - Other, 12 - Don't know, 13 - Not applicable - nothing	
40	DV	For the following question, please think about setting smart products to perform activities/ operates while you are not present (e.g. asleep, out of the house). For example, this could include; turning a smart vacuum on while you are out of the house, or setting a smart thermostat to change the heating temperature while you are asleep. How often, if at all, do you set your smart products to perform activities while you are not present?	1 - Always (i.e., every time I use the products), 2 - Often, 3 - Sometimes, 4 - Rarely, 5 - Never, Don't know	

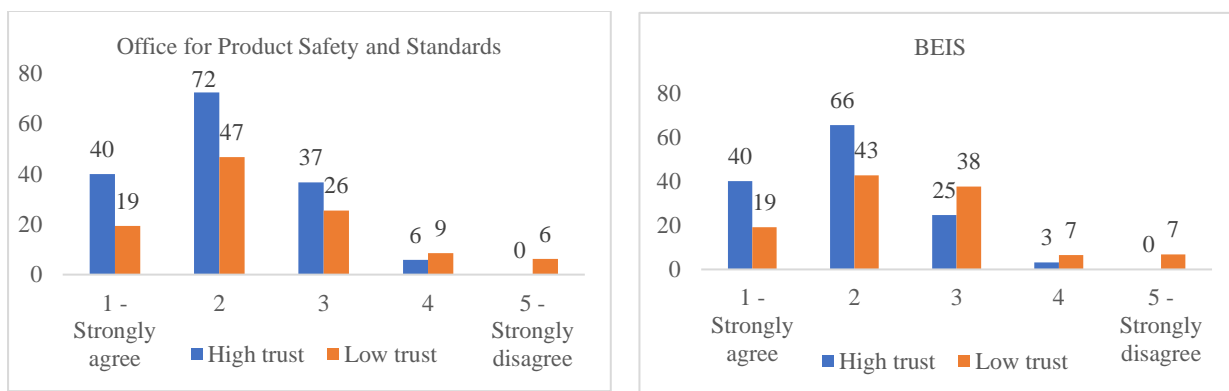
IV	Which, if any, of the following most influence you having trust in a product being safe? (Please select up to three options)	1 - The brand name of the retailer, 2 - The brand name of the manufacturer, 3 - The country of manufacturer/origins, 4 - The warranty/guarantee offered, 5 - The UK government safety framework, 6 - A kitemark/quality trademark, 7 - Online reviews/recommendations, 8 - A previous experience of buying the products, 9 - What the product looks/feels like, 10 - Recommendations from friends/family, 11 - Other, 12 - Don't know, 13 - Not applicable - nothing
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409 **Table 4.** Statistically significant analyses examined in relation to empowering people to make good choices.

410 Table 4 presents the six analyses explored here. Figure 4 shows trust in OPSS and BEIS by
 411 the degree to which people reportedly understand their legal rights and responsibilities
 412 correctly (Analyses 20-21 in Table 4). As we can see, the majority of respondents reported high
 413 trust in these two actors ($n = 119, 59\%$, for OPSS, $n = 134, 54\%$ for BEIS), and agreed that
 414 they understood their rights and responsibilities correctly. Indeed, as reported trust in OPSS
 415 increases, the odds of reportedly understanding legal rights and responsibilities correctly
 416 increase by 172% (95% CI [1.09, 2.74], $p = .011$). Moreover, as reported trust in the
 417 Department of Business, Energy and Industrial Strategy increases, there is a 276% (95% CI
 418 [1.72, 4.49], $p = .000$) increase in the likelihood of understanding legal rights and
 419 responsibilities.

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421

422 **Figure 4.** Trust in OPSS and BEIS by the extent to which people reported understanding their
 423 legal rights and responsibilities correctly (1 – strongly agree, 5 – strongly disagree). Counts
 424 presented due to the low numbers.

425

426 Figure 5 displays perceived ease to get help to deal with the safety issue when it first began by
 427 trust in OPSS and BEIS (Analyses 24-25 in Table 2). For both OPSS and BEIS, the majority
 428 of respondents reportedly agreed that they thought it would be easy to get help. More
 429 specifically, as reported trust in OPSS increases, the odds of believing it would be easy to get
 430 help to deal with the issue increase by 185% (95% CI [1.16, 2.96], $p = .011$). Furthermore, as
 431 reported trust in BEIS increases, there is a 244% (95% CI [1.52, 3.94], $p = .000$) increase in
 432 the likelihood of reportedly understanding legal rights and responsibilities correctly.

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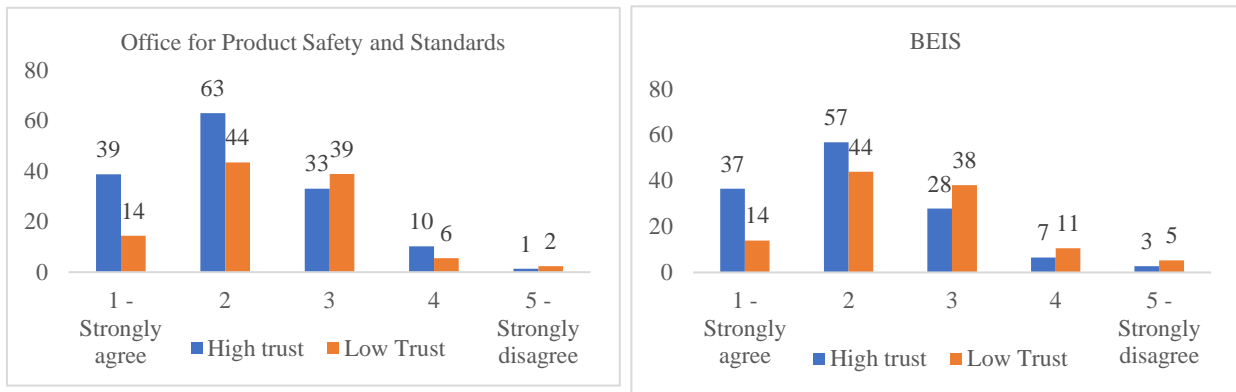


Figure 5. Trust in OPSS and BEIS by the extent to which people reported thinking it would be easy to get help to deal with the issue when it first started (1 – strongly agree, 5 – strongly disagree). Counts presented due to the low numbers.

Moving on to Analysis 27, in Wave 2, the principal components for the question examined above were more intuitive (Table 5) than Analysis 5 for Wave 1. For instance, aesthetics and price are both heuristic cues that demand less attention from the consumer compared with systematic cues such as warranty or recommendations which require more effort (Zhang et al. 2014; Sparks & Browning 2010). Moreover, aesthetic and price are arguably more salient than the others, for example, the manufacturer name which may not be as immediately accessible on an online shopping webpage. A regression revealed that people who select reputational factors (manufacturer and retailer name) ($B = 0.04, p = .003$) and immediacy factors (price, look and feel) ($B = 0.07, p = .000$) are significantly less likely to act if a product alerted them of an issue than those who did not select these factors. However, the effect is slightly stronger for those who select immediacy than reputational factors.

469 **Table 5.** Principal components for IV in Analysis 27

470

	RC4	RC3	RC2	RC1	h2	u2	com
Country	0.46	0.02	-0.07	0.19	0.25	0.75	1.4
UK safety framework	0.54	-0.20	0.15	-0.26	0.42	0.58	2.0
Kitemark	0.44	-0.39	0.24	-0.28	0.48	0.52	3.3
Online reviews	-0.66	-0.09	0.07	0.04	0.45	0.55	1.1
Price	-0.05	0.71	0.14	-0.01	0.53	0.47	1.1
Look and feel	0.06	0.65	0.05	-0.1	0.43	0.57	1.1
Previous experiences	-0.04	-0.11	-0.65	-0.16	0.46	0.54	1.2
Warranty	-0.22	-0.17	0.67	-0.27	0.59	0.41	1.7
Recommendations	-0.38	-0.14	-0.49	-0.31	0.5	0.5	2.8
Retailer name	-0.03	0.04	0.03	0.52	0.27	0.73	1.0
Manufacturer name	0.02	-0.22	0.06	0.69	0.53	0.47	1.2

471

472 **Table 6.** Regression results for Analysis 27

	Beta	SE	<i>p</i>
RC1 (reputational)	0.037	0.012	0.002
RC2	-0.019	0.012	0.120
RC3 (immediacy)	0.068	0.012	0.000
RC4	0.002	0.012	0.868

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475 For Analysis 40 in Wave 2, the same principal components were used but the dependent
476 variable was different. Those who rely on objective (warranty) but not subjective factors
477 (recommendations or previous experiences) are significantly more likely to set SMART
478 products off when absent than those who did not select warranty and did select
479 recommendations and previous experiences ($B = -0.088$, $p = .002$). Additionally, people who
480 select immediacy factors (price, look and feel) ($B = -0.122$, $p = .000$) are also more likely to
481 set SMART products off when absent than those who did not select these two factors and this
482 effect is stronger than for the objective component.

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487 **Table 7.** Regression results for Analysis 40

	Beta	SE	<i>p</i>
RC1	-0.028	0.029	0.321
RC2 (objective/subjective)	-0.088	0.028	0.002
RC3 (immediacy)	-0.121	0.029	0.000
RC4	0.000	0.032	0.747

488

489 **4. DISCUSSION**

490 Of the 42 analyses conducted, 11 yielded significant results, and of those results, only two
 491 results were a medium effect size with the remainder being small effect sizes. Here, we will
 492 first discuss the findings outlined in the previous section in relation to the two trusted regulator
 493 criteria (protecting people and places, and empowering consumers to make good choices). We
 494 then offer examples of how survey wording may have contributed to the lack of statistically
 495 significant results before addressing conceptual explanations.

496 **4.1. Protecting people and places**

497 Results show that high trust in consumer groups decreases the likelihood of requiring more
 498 intense treatment (i.e., urgent or tertiary) following a product safety issue compared with low
 499 trust. This was not the case with governmental departments whereby high trust increased the
 500 likelihood of requiring more intense treatment. It must be stated that these particular analyses
 501 were based on a small subset of respondents ($n = 87.5$, UK government departments, $n = 87.8$,
 502 consumer protection group). Nonetheless, this extends beyond previous research which found
 503 greater trust in consumer groups than government departments (Walls et al., 2004) by
 504 highlighting a small correlation between safety outcomes and trust. It is possible that citizens
 505 who trust in the government do not perceive a need to seek out product-safety information
 506 because they have faith that the wider product safety ecosystem will prevent safety issues. They
 507 therefore engage in riskier behaviours which, in turn, exposes them to greater injury.
 508 Conversely, those who trust in consumer groups may be more proactive in acquiring product-
 509 safety information which minimises the likelihood of intense injury. In other words, trust in
 510 these two institutions may differ in their impact on consumers' sense of responsibility for their
 511 own safety. Evidence in support of this interpretation can be found in Poortinga et al.'s (2004)
 512 research, which found that people wanted an independent source for reliable information after
 513 the foot and mouth outbreak. Unlike government departments, consumer organisations are

514 solely the voice of consumers and have no obligations to maintain interpersonal relations with
515 businesses. This finding also brings to the fore discussions regarding the appropriateness of
516 citizen trust in the general government from a safety perspective. Walls et al. (2004) found that
517 participants did not consciously wish to distrust regulators, but they felt it was necessary to
518 temper their trust with common sense because of the inescapable governmental influence. He
519 terms this *critical trust*, akin to Pidgeon et al. (2003), with uncritical emotional acceptance at
520 one end and outright scepticism at the other. While I do not claim trust causes injury, this
521 finding motivates further research on the implications of this unquestioned leap of faith.

522 In an online context, results revealed that for respondents whose trust in product safety
523 is influenced by online reviews, warranty and manufacturer name, they are less likely to require
524 intense treatment (urgent, tertiary) following a safety issue. Online reviews have been subject
525 to negative comment in the product safety sphere due to the high prevalence of fake reviews
526 which, based on prior research, Wu et al. (2020) observe ranges from 16% (Luca & Zerva,
527 2016) to 33% (Munzel, 2016). One negative consequence of fake reviews is that they mislead
528 consumers (Malbon 2013) or raise their suspicions when they are particularly manipulated
529 (Zhuang et al., 2018). This not only reduces trust but introduces the possibility of safety issues.
530 It is therefore surprising that those who select online reviews are more likely to require less
531 intense treatment than those who are not influenced by this factor.

532 It is perhaps more expected, however, that consumers who selected manufacturer name
533 are less likely to report more intense treatment. When purchasing products, consumers can use
534 cues to interpret product quality (Richardson et al. 1994). Purohit and Srivastava (2001) argue
535 that manufacturer name is regarded as a *high* scope cue, which means that assessments of
536 product quality based on this cue are less easily changed than *low* scope cues, such as price,
537 which vary from purchase to purchase. Given the stability of this factor, it follows that trust in
538 certain manufacturers is less likely to fluctuate, and so consumers can use prior interactions to
539 evaluate the potential severity of safety issues, thereby mitigating the risk of serious injury.
540 The authors argue that warranty is a low-scope cue, but it is still a form of structural assurance
541 (McKnight et al. 2002) which offers protection in the event that the product requires repair.
542 One could therefore argue that people whose trust is guided by warranty are more likely to
543 return the product if there is an issue, which prevents less intense injuries because they avoid
544 attempting to fix it themselves or continuing to use the product regardless. More broadly, this
545 result raises a question around the notion of trust as a process, rather than something static
546 (Möllering 2013). If trust is dynamic, people who rely solely on low-scope rather than high

547 scope cues may have more variable trust levels which, in turn, could have negative implications
548 for their safety outcomes.

549 **5.1.1. Empowering consumers to make good choices**

550 Results reveal that high trust in OPSS and BEIS is associated with greater perceived ease to
551 get help to deal with the safety issue when it arose. This indicates a pre-existing trust in OPSS
552 and BEIS which aligns with work on the relationship between trust and communication. Slovic
553 (1997) claims that if citizens are not willing to depend on the government, for example, then
554 this impacts their comprehension of communication while Löfstedt, (2005) argues that citizens’
555 response to communication depends on trust. In other words, trust precedes reliance on
556 communication which corroborates prior work highlighting the relationship between these
557 elements (Earle & Cvetkovich, 1995; Six & Verhoest, 2017). It is possible that people reported
558 high trust in these organisations precisely because the situation was resolved. In other words,
559 they may not have thought it was easy to get help to deal with the issue when it occurred, but
560 once it was sorted, they retrospectively assessed the situation as easy to resolve. This is an
561 example of the obstacles we discuss in 4.2.

562 However, we also found that trust in OPSS and BEIS is associated with an increased
563 perceived understanding of one’s rights and responsibilities. In line with the aforementioned
564 result, I propose the direction of this relationship is also that reliance on communication follows
565 trust rather than reliance on communication preceding trust. High trust made respondents more
566 receptive to information provided by OPSS/BEIS, so they were inclined to seek out and expend
567 more effort in understanding their legal rights and responsibilities following the safety issue.
568 Delving deeper, a prerequisite for the trust question in this analysis is that participants had to
569 know ‘just a little’, ‘a fair amount’ or ‘a great deal’ about the organisation (rather than ‘heard
570 of, but no nothing about’ or ‘never heard of’), and for the question on understanding, people
571 had to have experienced a safety issue. The majority reported knowing ‘just a little’ about
572 OPSS and BEIS respectively (43%, $n = 112$, 48% $n = 119$) and rated them as ‘trustworthy’
573 (41%, $n = 107$, 38%, $n = 95$). This aligns with Hunt & Frewer (1999) who found that
574 participants also expressed *low* levels of awareness about the National Radiological Protection
575 Board and the fictitious British Radiation Safety Agency and *moderate* trust, concluding that
576 the trust ratings were based on inferences from the names as opposed to knowledge. An
577 illustration of how there may be trust in but little knowledge about OPSS/BEIS is that despite
578 the prevalence of the controversial cladding crisis, which is within the remit of OPSS (and
579 more broadly BEIS), a Google News search for “office for product safety and standards” and

580 “cladding” produces just 1,600 results compared with 5,390,000 for “government” and
581 “cladding” (as of August 2022). This suggests that this high-profile case may not be perceived
582 as linked with OPSS, hence trust ratings are higher than expected. Otherwise put, it is not that
583 OPSS/BEIS are perceived as independent from government, but the nature of their activities is
584 unknown. This is why citizens report trusting in, and therefore relying on communication from
585 these two organisations to understand their rights and responsibilities, without knowing much
586 about them.

587 We also found that those who select immediacy factors (price, look/feel) are not only
588 less likely to act if a product they owned alerted them of a safety issue, but also more likely to
589 set off SMART goods when absent. It is unclear whether these risky behaviours are due to: (1)
590 an unwillingness to expend effort either acting on the alert or only setting off SMART goods
591 when present; (2) a low perceived risk associated with the behaviours. As mentioned earlier,
592 heuristic cues like price and aesthetics require less effort compared with cues such as warranty
593 or online reviews. It therefore follows that respondents who trust in these factors may also have
594 low motivation to engage in safety behaviours. Reputational factors (manufacturer name and
595 retailer name) are also heuristic cues (Macdonald & Sharp 2000) and were associated with
596 these two behaviours. It is perplexing that consumers ignore advice from the actors that
597 influence their trust in product safety, but these behaviours may be the result of this very trust
598 which once again could signal how trust might increase the risk of encountering a safety issue.
599 Wicks et al. (1999) argue that consumers should aim for optimal trust, which arises out of
600 careful deliberation of the context and situation. In this case, it’s not that institutional trust
601 results in abusive behaviour from the trustee (retailer/manufacturer), but more so complacency
602 by the trustor (consumer). This also shows how, a strategic goal, such as becoming a trusted
603 regulator, may be at odds with protecting people, and empowering them to make good choices.

604 Aside from these findings, the remaining analyses yielded non-significant results which
605 could be for myriad survey wording reasons. We now turn our attention to these potential
606 explanations before addressing possible conceptual issues.

607 **5.2. Survey wording**

608 Research has regularly alluded to the challenges of measuring trust (e.g., Earle et al., 2010;
609 Freitag & Bauer 2013; Grimmelikhuijsen & Knies 2017; Van de Walle and Six 2014). There
610 are several ways in which question phrasing can hinder a respondent’s ability to provide an
611 optimum answer, and therefore influence the results. Lietz (2010) notes that surveys should
612 avoid hypothetical questions when tapping into future behaviours, especially if these seldom

613 occur (Gideon 2012). Converse and Presser (1986) argue that participants are unlikely to
614 respond in a way that would mirror their behaviour if the situation was real, while Belson
615 (1981) found that they will adjust the question if it is perceived as too difficult, such as by
616 ignoring certain clauses or phrases. Indeed, for one hypothetical question, the proportion of
617 DKs was one of the highest for the entire dataset at 16% ($n = 651$), and it also contained
618 complex phrasing: ‘How likely would you be to act if a product you owned alerted you via the
619 product/associated app of issues with the product?’ Trying to imagine how one would act in
620 this situation combined with the question formulation arguably contributed to this DK
621 response. An additional indication of question complexity is that they ask about more than one
622 concept (Brace 2004; Foddy 1993; Fowler Jr. 1992). Take the question: ‘To what extent do
623 you agree or disagree with the following statements about the safety issue you had with the
624 following product: X. And today...I understand my legal rights and responsibilities correctly.’
625 A respondent may perceive that that they understand their legal rights and responsibilities, but
626 there is an additional more meta-analytical question about the extent to which they think these
627 beliefs are correct. This raises the issue of face validity, such that ambiguous questions can
628 lead to multiple interpretations.

629 Another reason for a high proportion of DKs is a lack of understanding the question
630 content rather than the phrasing. For example, participants were asked to choose from a list of
631 definitions which they believe most closely matches different marks that indicate safety (e.g.,
632 baby with a line, kitemark, CE mark). The lowest proportion of DKs was 38% (baby with a
633 line) and the highest was 76% (pictogram). In another related question, even among those who
634 reportedly relied on a specific mark to inform their purchase decision, their answers do not
635 match what is feasible, for example, a lion mark is applied to toys, but a proportion of
636 respondents (~3%) claimed to look for this when buying white goods, electricals, and furniture.

637 It is worth discussing the role of DKs and other options such as ‘Can’t recall.’ The
638 survey asked respondents if they have purchased numerous items in the past 6 months, and if
639 they have encountered any safety issues, as well as related questions regarding perceived ease
640 of getting help to deal with the issue. This introduces the problem of recall error, and the time
641 period respondents are asked to reflect upon. In research on injury and memory decay, Jenkins
642 et al. (2002) found that recall rates were significantly different at three time periods: 108/1000
643 for two months, 66/1000 for 12 months, and 19.2/1000 for 10 years. They conclude that injury
644 recall is likely to be underestimated if it occurs two months after the incident. This survey

645 measures self-reported safety issues which does not necessarily encapsulate injuries, but it is
646 still possible that recall error negatively impacted the data analysis.

647 Furthermore, the consistency of the options presented may have triggered further
648 confusion. For example, a midpoint and a DK was provided for questions on trust in different
649 organisations, and in such cases, participants may rule out that DK means ‘neither’ as there is
650 an explicit option for this. Elsewhere, only a midpoint *or* a DK was offered, but the absence of
651 a midpoint may then seem to signal DK could be ‘neither’ *or* ‘don’t know’. Lastly, on
652 occasions, a DK was instead presented with a forward slash alongside ‘can’t recall’. As a result,
653 the range of options may have led participants to interpret each option differently depending
654 on the question. The impact of presenting different response options is highlighted by Schuman
655 and Presser (1979) who found that when a question does provide a DK option, 20%-25%
656 respondents select that option compared with the same question without a DK option. We
657 recognise, however, it is also entirely plausible that the proportion of DKs is not due to survey
658 design, for example, questions around SMART products tended to have a high proportion but
659 this could also be due to the lower prevalence of these products in the population.

660 In sum, it is possible that the small effect sizes and a lack of significant findings may
661 be related to the design of the survey. After all, Van De Walle and Six (2014) observe that there
662 is often a gulf between measurement and theory. However, this is arguably expected given that
663 survey design and trust as a concept are both highly complex, and the data analysed here were
664 the first large-scale nationally representative surveys conducted by OPSS. We now turn my
665 attention to explore the conceptual issues that may have impacted the analysis.

666 **5.3. Conceptual**

667 First, regarding the question about trust in different institutions, which formed several analyses,
668 they all measured institutional trust but there was large variation regarding the specificity of
669 the target. Respondents were asked to answer in relation to OPSS and BEIS, which are very
670 specific, but the UK government departments and NGOs are much broader. In fact, the
671 proportion of DKs for NGOs was consistently the highest perhaps because the ‘non’ does not
672 so much communicate who the target *is* than *is not*. Dietz and Den Hartog (2006) draw our
673 attention to the consequences of inconsistent targets, such that respondents may personify the
674 government, for example, in different ways. Is it the prime minister Boris Johnson, the House
675 of Lords, another high-profile member of parliament who recently appeared in the media such
676 as Priti Patel, Rishi Sunak or Sajid Javid, or all of them? By leaving the target open to

677 interpretation, the question is likely to capture vastly different relationships, as well as various
678 aspects of these relationships.

679 On other occasions, the trust base under investigation was unclear. For example, the
680 following question could be interpreted as measuring trust in the wider safety ecosystem, i.e.,
681 institutional trust: ‘To what extent do you agree or disagree with the following statements about
682 the safety issue you had with the following product: *respondent assigned product*? At the
683 time the issue first started: I thought it would be easy to get help deal with the issue’.
684 Alternatively, it may be interpreted as to what extent the respondent trusted themselves to find
685 the necessary report to deal with the issue. In other words, their self-efficacy to successfully
686 resolve the problem. Therefore, given this uncertainty, respondents may answer with different
687 trust bases in mind which makes it difficult to ascertain whether their responses are comparable.

688 From the perspective of nature, it is interesting to point out that the survey primarily
689 captures trust-as-attitude, as with the question on trust in different organisations. However, it
690 also touches on trust-as-choice by probing what factors influence one’s trust that a product is
691 safe. Incorporating these questions are invaluable in allowing OPSS to capture whether citizens
692 are making that leap of faith or merely holding the attitude without exposing themselves to
693 further vulnerability and uncertainty. Moreover, the survey measures both affective and
694 cognitive trust, for instance, a cognitive item is, ‘To what extent, if at all, do you agree with
695 the following statements? *I believe* online marketplaces take action if there is an unsafe product
696 being sold on their platform’ and an affective item is, ‘How *comfortable*, if at all, do you *feel*
697 about the manufacturer of your smart white good doing each of the following? Collecting data
698 about the product to monitor the condition of the product, e.g., so they can tell you when a part
699 needs replacing’). In other words, this latter question is tapping into the participant’s (i.e., the
700 trustor’s) affect towards the manufacturer (the trustee), which, it has been argued, then
701 interrupts the cognitive, more rational predictions of trust (Möllering 2006). What has also been
702 observed is that accessibility to these two aspects may vary depending on the target. For
703 instance, Abelson et al. (1982) found that attitudes towards political candidates was better
704 predicted by affective than cognitive information. Therefore, although trust arguably involves
705 both components, certain associations may not have been found because trust in the target, e.g.,
706 manufacturers, local authorities, family and friends, was more strongly predicted by the
707 component not captured in the question. Other research goes further to argue that the affective
708 component is more accessible (Huskinson & Haddock 2006; Verplanken et al., 1998). This is
709 based on the argument that cognitive processes are more complex than affective reactions

710 which are more primary (e.g., Zajonc 1984) and need not be tested for truth. Indeed, this aligns
711 with Rousseau et al.'s (1998) argument that personalised trust (otherwise known as affective
712 trust) may be easier to recall, precisely because it is rooted in feeling rather than cognition.

713 These conceptual points shed light on the lack of findings beyond those discussed, as
714 well as the small effect sizes of the findings that were significant. Metlay (1999) criticises
715 researchers for complicating the concept of trust unnecessarily, an observation to which we are
716 sympathetic, but we believe these discussions nonetheless merit our attention given the
717 repeatedly attested importance of trust and the number of unsupported analyses presented here.

718 **6. Conclusion**

719 OPSS was only established four years ago following the Grenfell tragedy but its wide remit
720 from white goods to toys, online to offline products, underscores the importance of examining
721 institutional trust. Extending beyond the small body of research on citizen trust in British
722 regulators like HSE (Walls et al., 2004; Walker et al., 1998), this study is the first to not only
723 explore trust in the UK's public safety regulator and the broader landscape, but also offer an
724 examination of the measurement tools.

725 The findings reveal that trust not only varies across actors in the product safety system
726 (e.g., consumer protection bodies, OPSS, manufacturers, retailers, UK government
727 departments) and product-related factors (price, look and feel, warranty), but this trust impacts
728 consumer behaviours (setting off SMART products, acting in response to a safety alert), beliefs
729 (the resolution of safety issues), and understanding (rights and responsibilities). However, these
730 findings must be caveated given the small sample sizes for some analyses, such as the treatment
731 required following a safety issue, as well as survey wording through the inclusion of, for
732 example, hypotheticals and complex phrasing. We also hope to have furthered discussions on
733 conceptual issues of trust, such as the specificity of the target, which may have contributed to
734 the lack of statistically significant results.

735 What was not examined here were comparisons of responses between waves, which
736 would shed light on trust as a dynamic process rather than simply a static response. Specifically,
737 this would measure the temporal aspect of trust, which is of particular interest in light of the
738 turbulent last few years where governments worldwide have been under pressure to respond to
739 the pandemic, as well as recent product safety controversies like Grenfell. The urgency of
740 research in this area is further exacerbated given that technological developments have created
741 a gulf between consumers and manufacturers, and product safety communication is
742 increasingly complex. To protect people, as well as empower them to make good choices, it is

743 not enough to ask questions and analyse answers, but probe deeper on a measurement,
744 conceptual and strategic level.
745

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969

970 Appendix A.

971 Questions

Analysis	Variable	Question	Response options	Wave
Protecting People and Places				
1	DV IV	To what extent do you agree or disagree with the following statement: I expect a product to be safe regardless of price You earlier said that a safety issue you had with the following product *respondents assigned product*, resulted in harm to the user. What was the main level of harm experienced?	1 - Strongly agree, 2 - Agree, 3 - Neither agree, nor disagree, 4 - Disagree, 5 - Strongly disagree 1 - No aid needed, 2 - First aid needed (e.g., plaster, compression bandage), 3 - Urgent medical attention required (e.g., A&E), 4 - Non-urgent attention required (e.g., GP), 5 - Tertiary medical attention required (e.g., specialist healthcare, prolonged healthcare) , 6 - Don't know/can't recall, 7 - Prefer not to say	
2	DV IV	You earlier said that a safety issue you had with the following product *respondents assigned product*, resulted in harm to the user. What was the main level of harm experienced? Which, if any, of the following most influence you having trust in a product being safe? (Please select up to three options)	1 - No aid needed, 2 - First aid needed (e.g., plaster, compression bandage), 3 - Urgent medical attention required (e.g., A&E), 4 - Non-urgent attention required (e.g., GP), 5 - Tertiary medical attention required (e.g., specialist healthcare, prolonged healthcare) , 6 - Don't know/can't recall, 7 - Prefer not to say 1 - The brand name of the retailer, 2 - The brand name of the manufacturer, 3 - The country of manufacturer/origins, 4 - The warranty/guarantee offered, 5 - The UK government safety framework, 6 - A kitemark/quality trademark, 7 - Online reviews/recommendations, 8 - A previous experience of buying the products, 9 - What the product looks/feels like, 10 - Recommendations from friends/family, 11 - Other, 12 - Don't know, 13 - Not applicable - nothing	

3-6	DV	You earlier said that a safety issue you had with the following product *respondents assigned product*, resulted in harm to the user. What was the main level of harm experienced?	1 - No aid needed, 2 - First aid needed (e.g., plaster, compression bandage), 3 - Urgent medical attention required (e.g., A&E), 4 - Non-urgent attention required (e.g., GP), 5 - Tertiary medical attention required (e.g., specialist healthcare, prolonged healthcare) , 6 - Don't know/can't recall, 7 - Prefer not to say	1
	IV	Of the following types of organisations, in general how trustworthy or not do you think each are in how they operate towards you? UK Government departments, Local government, Non-governmental organisations, Consumer protection bodies	1 - Very trustworthy, 2 - Trustworthy, 3 - Neither, 4 - Untrustworthy, 5 - Very untrustworthy, Don't know	1
7	DV	To what extent do you agree or disagree with the following statement: I expect a product to be safe regardless of price	1 - Strongly agree, 2 - Agree, 3 - Neither agree, nor disagree, 4 - Disagree, 5 - Strongly disagree	
	IV	You earlier said that a safety issue you had with the following product *respondents assigned product*, resulted in harm to the user. What was the main level of harm experienced?	1 - No aid needed, 2 - First aid needed (e.g., plaster, compression bandage), 3 - Urgent medical attention required (e.g., A&E), 4 - Non-urgent attention required (e.g., GP), 5 - Tertiary medical attention required (e.g., specialist healthcare, prolonged healthcare) , 6 - Don't know/can't recall, 7 - Prefer not to say	
Empowering people to make good choices				
8-11	DV	To what extent do you agree or disagree with the following statements about the safety issue you had with the following product: ? And today...I understand my legal rights and responsibilities correctly	1 - Strongly agree, 2 - Agree, 3 - Neither, 4 - Disagree, 5 - Strongly disagree	1
	IV	Of the following types of organisations, in general how trustworthy or not do you think each are in how they operate towards you? UK Government departments, Local government, Non-governmental organisations, Consumer protection bodies	1 - Very trustworthy, 2 - Trustworthy, 3 - Neither, 4 - Untrustworthy, 5 - Very untrustworthy, Don't know	1

12-15	DV	To what extent do you agree or disagree with the following statements about the safety issue you had with the following product: *respondent assigned product* ? At the time the issue first started: I thought it would be easy to deal with the issue	1 - Strongly agree, 2 - Agree, 3 - Neither, 4 - Disagree, 5 - Strongly disagree	1
	IV	Of the following types of organisations, in general how trustworthy or not do you think each are in how they operate towards you? UK Government departments, Local government, Non-governmental organisations, Consumer protection bodies	1 - Very trustworthy, 2 - Trustworthy, 3 - Neither, 4 - Untrustworthy, 5 - Very untrustworthy, Don't know	1
16-19	DV	To what extent do you agree or disagree with the following statements about the safety issue you had with the following product: *respondent assigned product* ? At the time the issue first started: I thought it would be easy to get help to deal with the issue	1 - Strongly agree, 2 - Agree, 3 - Neither, 4 - Disagree, 5 - Strongly disagree	1
	IV	Of the following types of organisations, in general how trustworthy or not do you think each are in how they operate towards you? UK Government departments, Local government, Non-governmental organisations, Consumer protection bodies	1 - Very trustworthy, 2 - Trustworthy, 3 - Neither, 4 - Untrustworthy, 5 - Very untrustworthy, Don't know	1
20-21	DV	To what extent do you agree or disagree with the following statements about the safety issue you had with the following product: ? And today...I understand my legal rights and responsibilities correctly	1 - Strongly agree, 2 - Agree, 3 - Neither, 4 - Disagree, 5 - Strongly disagree	1
	IV	Of the following types of organisations, in general how trustworthy or not do you think each are in how they operate towards you? Office for Product Safety and Standards, BEIS	1 - Very trustworthy, 2 - Trustworthy, 3 - Neither, 4 - Untrustworthy, 5 - Very untrustworthy, Don't know	1
22-23	DV	To what extent do you agree or disagree with the following statements about the safety issue you had with the following product: *respondent assigned product* ? At the time the issue first started: I thought it would be easy to deal with the issue	1 - Strongly agree, 2 - Agree, 3 - Neither, 4 - Disagree, 5 - Strongly disagree	1

	IV	Of the following types of organisations, in general how trustworthy or not do you think each are in how they operate towards you? Office for Product Safety and Standards, BEIS	1 - Very trustworthy, 2 - Trustworthy, 3 - Neither, 4 - Untrustworthy, 5 - Very untrustworthy, Don't know	1
24-25	DV	To what extent do you agree or disagree with the following statements about the safety issue you had with the following product: *respondent assigned product* ? At the time the issue first started: I thought it would be easy to get help to deal with the issue	1 - Strongly agree, 2 - Agree, 3 - Neither, 4 - Disagree, 5 - Strongly disagree	1
	IV	Of the following types of organisations, in general how trustworthy or not do you think each are in how they operate towards you? Office for Product Safety and Standards, BEIS	1 - Very trustworthy, 2 - Trustworthy, 3 - Neither, 4 - Untrustworthy, 5 - Very untrustworthy, Don't know	1
26	DV	For the following question, please imagine you owned a product which had broken and was no longer operating correctly. How likely, if at all are you to do each of the following things? Attempt to repair it myself.	1 - Very likely, 2 - Fairly likely, 3 - Fairly unlikely, 4 - Very unlikely	1
	IV	Which, if any, of the following most influence you having trust in a product being safe? (Please select up to three options)	1 - The brand name of the retailer, 2 - The brand name of the manufacturer, 3 - The country of manufacturer/origins, 4 - The warranty/guarantee offered, 5 - The UK government safety framework, 6 - A kitemark/quality trademark, 7 - Online reviews/recommendations, 8 - A previous experience of buying the products, 9 - What the product looks/feels like, 10 - Recommendations from friends/family, 11 - Other, 12 - Don't know, 13 - Not applicable - nothing	1
27	DV	How likely would you be to act if a product you owned alerted you via the product of an issue?	1 - Very likely, 2 - Fairly likely, 3 - Fairly unlikely, 4 - Very unlikely. Don't know	

	IV	Which, if any, of the following most influence you having trust in a product being safe? (Please select up to three options)	1 - The brand name of the retailer, 2 - The brand name of the manufacturer, 3 - The country of manufacturer/origins, 4 - The warranty/guarantee offered, 5 - The UK government safety framework, 6 - A kitemark/quality trademark, 7 - Online reviews/recommendations, 8 - A previous experience of buying the products, 9 - What the product looks/feels like, 10 - Recommendations from friends/family, 11 - Other, 12 - Don't know, 13 - Not applicable - nothing
28	DV	To what extent do you agree or disagree with the following statements: I only buy from retailers I trust to ensure the products they sell are safe	1 - Strongly agree, 2 - Agree, 3 - Neither, 4 - Disagree, 5 - Strongly disagree, Don't know
	IV	Which of the following actions did you take after becoming aware of the safety issue with the following product: ? (Please select all that apply)	1 - Returned the item for a refund/exchange, 2 - Threw it away/stopped using it but did not return 3 - Followed manufacturer's guidance for safe use, 4 - Tried to fix it myself, 5 - Allowed manufacturer to make modification, 6 - Complained to the manufacturer, 7 - Complained to to where I bought it from, 8 - Other, 9 - Don't know/can't recall, 10 - Nothing, I didn't take any action
29	DV	For the following question please think about when you are buying products online...To what extent, if at all, do you agree with the following statements? I believe online marketplaces take action if there is an unsafe product being sold on their platform.	1 - Strongly agree, 2 - Agree, 3 - Neither, 4 - Disagree, 5 - Strongly disagree
	IV	How likely would you be to act if a product you owned alerted you via the product of an issue?	1 - Very likely, 2 - Fairly likely, 3 - Fairly unlikely, 4 - Very unlikely. Don't know
30	DV	To what extent do you agree or disagree with the following statement: I expect a product to be safe regardless of price	1 - Strongly agree, 2 - Agree, 3 - Neither agree, nor disagree, 4 - Disagree, 5 - Strongly disagree

	IV	Of the following types of organisations, in general how trustworthy or not do you think each are in how they operate towards you?	1 - Very trustworthy, 2 - Trustworthy, 3 - Neither, 4 - Untrustworthy, 5 - Very untrustworthy, Don't know
31	DV	To what extent do you agree or disagree with the following statement: I expect a product to be safe regardless of price	1 - Strongly agree, 2 - Agree, 3 - Neither agree, nor disagree, 4 - Disagree, 5 - Strongly disagree
	IV	Which, if any, of the following most influence you having trust in a product being safe? (Please select up to three options)	1 - The brand name of the retailer, 2 - The brand name of the manufacturer, 3 - The country of manufacturer/origins, 4 - The warranty/guarantee offered, 5 - The UK government safety framework, 6 - A kitemark/quality trademark, 7 - Online reviews/recommendations, 8 - A previous experience of buying the products, 9 - What the product looks/feels like, 10 - Recommendations from friends/family, 11 - Other, 12 - Don't know, 13 - Not applicable - nothing
32-26	DV	To what extent do you agree or disagree with the following statement: I expect a product to be safe regardless of price	1 - Strongly agree, 2 - Agree, 3 - Neither agree, nor disagree, 4 - Disagree, 5 - Strongly disagree
	IV	Which, if any, of the following marks would you look for when purchasing each of the following types of product? Electrical, White Goods, Toys, Cosmetics, Baby Products	1 - CE mark, 2 - UKCA mark, 3 - Baby with a line, 4 - BSI Kitemark, 5 - Lion mark, 6 - Pictogram, 7 - Display label, 8 - None of these, Don't know
37	DV	How comfortable, if at all, do you feel about the manufacturer of your smart white good doing each of the following? Collecting data about the product to monitor the condition of the product (e.g., so they can tell you when a part needs replacing)	1 - Very comfortable, 2 - Fairly comfortable, 3 - Not very comfortable, 4 - Not very comfortable, Don't know
	IV	Safety issues are more likely to be caused by people misusing products, rather than an issue with the product itself	1 - Strongly agree, 2 - Agree, 3 - Neither agree, nor disagree, 4 - Disagree, 5 - Strongly disagree

38	DV	How comfortable, if at all, do you feel about the manufacturer of your smart white good doing each of the following? Alert you via the product/association app if the product if there are safety issues (e.g., so they can tell you if the product has been recalled)	1 - Very comfortable, 2 - Fairly comfortable, 3 - Not very comfortable, 4 - Not very comfortable, Don't know
	IV	Safety issues are more likely to be caused by people misusing products, rather than an issue with the product itself	1 - Strongly agree, 2 - Agree, 3 - Neither agree, nor disagree, 4 - Disagree, 5 - Strongly disagree
39	DV	How comfortable, if at all, do you feel about the manufacturer of your smart white good doing each of the following? Make changes to the product remotely (e.g., software update to prevent certain functions) if there are physical safety issues.	1 - Very comfortable, 2 - Fairly comfortable, 3 - Not very comfortable, 4 - Not very comfortable, Don't know
	IV	Safety issues are more likely to be caused by people misusing products, rather than an issue with the product itself	1 - Strongly agree, 2 - Agree, 3 - Neither agree, nor disagree, 4 - Disagree, 5 - Strongly disagree
40	DV	For the following question, please think about setting smart products to perform activities/ operates while you are not present (e.g. asleep, out of the house). For example, this could include; turning a smart vacuum on while you are out of the house, or setting a smart thermostat to change the heating temperature while you are asleep.How often, if at all, do you set your smart products to perform activities while you are not present?	1 - Always (i.e., every time I use the products), 2 - Often, 3 - Sometimes, 4 - Rarely, 5 - Never, Don't know
	IV	Which, if any, of the following marks would you look for when purchasing each of the following types of product	1 - CE mark, 2 - UKCA mark, 3 - Baby with a line, 4 - BSI Kitemark, 5 - Lion mark, 6 - Pictogram, 7 - Display label, 8 - None of these, Don't know
41	DV	For the following question, please think about setting smart products to perform activities/ operates while you are not present (e.g. asleep, out of the house). For example, this could include; turning a smart vacuum on while you are out of the house, or setting a smart thermostat to change the heating temperature while you are asleep.How often, if at all, do you set your smart products to perform activities while you are not present?	1 - Always (i.e., every time I use the products), 2 - Often, 3 - Sometimes, 4 - Rarely, 5 - Never, Don't know

	IV	To what extent do you agree or disagree with the following statement: I expect a product to be safe regardless of price	1 - Strongly agree, 2 - Agree, 3 - Neither agree, nor disagree, 4 - Disagree, 5 - Strongly disagree	2
42	DV	Product registration involves providing your details and model details to the manufacturer when you bought it so that they could contact you if a safety issue was later identified with your make/model of product. Did you register the when you bought it?	1 - Yes, 2 - No	2
	IV	To what extent do you agree or disagree with the following statement: I expect a product to be safe regardless of price	1 - Strongly agree, 2 - Agree, 3 - Neither agree, nor disagree, 4 - Disagree, 5 - Strongly disagree	2

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