

## **Tilburg University**

### Persuasive colours for trust in E-commerce

Broeder, P; van Doremalen, L

Published in:

Russian Journal of Communication

DOI:

10.1080/19409419.2021.1951066

Publication date:

2021

Document Version Publisher's PDF, also known as Version of record

Link to publication in Tilburg University Research Portal

Citation for published version (APA):
Broeder, P., & van Doremalen, L. (2021). Persuasive colours for trust in E-commerce: Dutch Blue or Russian Red? Russian Journal of Communication, 1-14. https://doi.org/10.1080/19409419.2021.1951066

#### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
   You may freely distribute the URL identifying the publication in the public portal

**Take down policy**If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Download date: 02. Nov. 2021



# **Russian Journal of Communication**



ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/rrjc20

# Persuasive colours for trust in E-commerce: Dutch blue or Russian red?

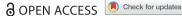
### Peter Broeder & Lisanne van Doremalen

**To cite this article:** Peter Broeder & Lisanne van Doremalen (2021): Persuasive colours for trust in E-commerce: Dutch blue or Russian red?, Russian Journal of Communication, DOI: 10.1080/19409419.2021.1951066

To link to this article: <a href="https://doi.org/10.1080/19409419.2021.1951066">https://doi.org/10.1080/19409419.2021.1951066</a>









# Persuasive colours for trust in E-commerce: Dutch blue or Russian red?

Peter Broeder Dand Lisanne van Doremalen

Department of Communication and Cognition, Tilburg University, Tilburg, Netherlands

#### **ABSTRACT**

This study aims to investigate the effects of web store colours (blue or red) on e-commerce. Specifically, a comparison is made between consumers from two cultures: Dutch and Russian. They participated in an experimental survey and expressed their trust in a web store and their intention to purchase a low-involvement product (a laptop sleeve). The results showed that initial trust and cultural background seem to influence online purchase intention. Higher levels of initial trust were related to higher purchase intentions. Interestingly, where the more uncertainty-avoidant Russian consumers trusted the web store, the Dutch consumers were more likely to purchase the product, regardless of the colour they were exposed to. It is recommended to unravel the degree of localisation of web stores' atmosphere in global e-commerce. Consumers from different cultural backgrounds might not feel and behave the same in a differently coloured, online retail environment.

#### **ARTICLE HISTORY**

Received 16 March 2021 Accepted 29 June 2021

#### **KEYWORDS**

E-commerce; marketing; trust: colour: consumer behaviour: cross-cultural

#### Introduction

Although online retail stores are flourishing, consumers still perceive higher risks (such as privacy and security) when purchasing products online as compared to offline (Chakraborty et al., 2016; Miyazaki & Fernandez, 2001). Comparable web stores are offering increasingly similar products and services due to rapid proliferation. Instrumental qualities such as convenient home delivery and broader product selections are not perceived as unique anymore (Koo & Ju, 2010). Hence, an e-vendor needs to make their web store different from competitors by focusing on hedonic store atmospherics. Looking beyond the actual product and creating a memorable multisensory shopping experience may have a positive effect on the attitude and behaviour of the consumer (Roschk et al., 2017; Spence et al., 2014).

In particular, the atmospheric colour is an important factor that determines the visual impression of an online retail environment. Colours help one differentiate one online retail shop from another, as they influence the mood and feelings of consumers. Every

CONTACT Peter Broeder peter@broeder.com Department of Communication and Cognition, Tilburg University, Tilburg, Netherlands

colour has its own associations and meanings and can thus be used to influence consumers in different ways (Madden et al., 2000; Muhammad, 2018). The right colour in an online environment can positively affect the consumer's trust and reduce feelings of uncertainty while shopping online so that the intended task such as that of buying a product can be executed. Several studies have investigated the factors that reduce mistrust in an online environment. There are some findings related to the effects of colour on the process of establishing trust between e-vendor and consumer and purchase intention (Bellizzi & Hite, 1992; Cyr et al., 2010; Gorn et al., 2004; Hall & Hanna, 2004; Pelet & Papadopoulou, 2012). The colour 'blue' seems to be the most promising and trustevoking colour. Specific value variations (dark vs. light) might have different effects on consumers' perception and, subsequently, consumers' behaviour (Broeder & Snijder, 2019). It can be concluded that the effect of blue on trust and behaviour would be greater for consumers from cultures that are generally more risk-averse and place more emphasis on trust-inducing factors (Lim et al., 2004).

This study researches the effect of colour on trust and purchase intention in an online environment, differentiated culturally by uncertainty avoidance. First, the core notions colour, uncertainty avoidance and trust have been delineated and related to cultural differences in consumer behaviour. Then, the method and findings of an experiment conducted with Dutch and Russian consumers have been presented; they were asked to express their attitudes and purchase intentions in a blue or red atmospheric web store.

#### Literature review

#### **Colour differentiations**

Our world is full of colours that can alter the meaning of objects or situations. Consumer behaviour can be predicted by observing their colour preferences (Aslam, 2006). Most consumers are unaware of the different associations that colours might evoke. Colour is light that is carried on distinct wavelengths (Singh, 2006). On one side, colours with long wavelengths, such as yellow and red, are seen, which are 'warm'. These colours are perceived as arousing (Clarke & Costall, 2008). On the other side, colours with short wavelengths, such as blue, green and violet, are seen, which are 'cool'. These colours are perceived as peaceful and calming and can reduce feelings of anxiety. In general, cool colours induce more pleasant feelings and are perceived as more favourable than warm colours (Cheng et al., 2009; Cyr et al., 2010; Wang & Emurian, 2005). Specifically, the factors of emotion and trust have been shown in previous studies to have a relationship both with certain colours and with online purchasing intentions. The cool colour 'blue' evokes trust (Cyr et al., 2010; Lee & Rao, 2010; Lichtlé, 2007). The warm colour 'red' evokes emotion, which is exciting and stimulating but also distracting (Broeder & Wildeman, 2020; Kauppinen-Räisänen, 2014).

Cultures differ in the meanings and associations of colours (Madden et al., 2000). For the three primary colours, yellow, blue and red, Broeder and Scherp (2017) investigated cultural differences and their persuasive influence in the web store atmosphere. This study tried to unveil the relationship between colour and online purchasing intention, taking into account the influence of emotion, trust and cultural differences among consumers from three Western and four Asian cultures. They participated in an experiment

in which they were presented with an online shopping background, a coloured context (yellow, blue or red) and a simple digital photo camera. The direct relationship between colour and online purchasing intention was supported only for the colour 'yellow'. In addition, emotion indeed played a mediating role between colour and online purchasing intention, although no clear relationships could be defined between the colours 'red' and 'blue' on the one hand and emotion and trust on the other hand. Concerning the cultural differences, an association with emotion was found for both Western and Asian cultures, but trust was shown to influence the relationship between colour and online purchasing intention only for Asian consumers.

#### **Cultural differentiations**

The meta-analysis by Kim and Peterson (2017) revealed that a lack of trust was repeatedly identified as a limitation for people to engage in online transactions. In an online shopping environment, there is a higher chance that a consumer might perceive an unknown web store as less trustworthy due to a lack of information about the evendor, payment methods or the delivery process (Chang & Wen, 2008; Kim et al., 2008). In a traditional shopping environment, this information is more easily accessible because of the provision of, for instance, direct communication with an employee. Online retail shops can overcome these perceptions of uncertainty by positively influencing their perceived credibility, integrity and benevolence in the eyes of the consumers (Harridge-March, 2006; Kooli et al., 2014).

Consumer differences in the willingness to trust others and situations are related to their cultural backgrounds (Ganguly et al., 2010). These differences in uncertainty avoidance refer to how people following a certain culture manage ambiguous situations and events that are beyond their control. Cultures that tend to score high in uncertainty avoidance place a high value on structure and security and do not prefer to take risks. The opposite is true for people following cultures with low uncertainty avoidance (Hofstede, 2021). The degree of uncertainty avoidance will influence online purchase intention. For example, similar to Lim et al. (2004), Al Kailani and Kumar (2011) found that people from cultures with a low tolerance for uncertainty are more cautious during online shopping. They are, therefore, less likely to proceed with an online transaction than people from cultures with low levels of uncertainty avoidance. Therefore, it is argued that people in high uncertainty avoidance cultures need more convincing by the web store to establish trust. Only then might high uncertainty-avoidant consumers decide to proceed with an online transaction in a web store (Hwang & Lee, 2012; Koufaris & Hampton-Sosa, 2004). Hence, cultures scoring high on uncertainty avoidance might react stronger to cues that have been found to affect perceived trust in an online environment. Trust is a multi-dimensional construct (Colquitt et al., 2007; Kooli et al., 2014; McKnight & Chervany, 2002). According to Broeder (2020), three types of trust can be applied based on the characteristics of the consumers and the online shopping environment. First, initial trust refers to the consumers' initial perception of the web store. It describes the consumers' intention to accept the vulnerability of a web store based on positive expectations from subsequent actions. In fact, it is a context-dependent, subjective personal characteristic of a specific web store gauged by a specific consumer. Second, trustworthiness refers to the ability, willingness and integrity of a web store. It is the basis for consumers' familiarity with

online web store transactions. Finally, trust propensity refers to a distinct dispositional attribute of a person and refers to the general tendency to trust others, the willingness to depend on situations, persons, or both and the independence of the online shopping environment.

Broeder and Sniider (2019) researched the effect of the colour 'blue' on trust and the intention to book an accommodation among different culture. Chinese and Dutch consumers judged an accommodation offer displayed within either a predominantly darker, or lighter valued blue Airbnb-like booking environment. The results showed an indirect (mediating) effect of initial trust on the relationship between the predominantly darker-coloured blue environment and booking intention. There was no evidence of a moderating effect of culture. Broeder and Sniider (2019) recommended to e-vendors the use of dark blue colour schemes in an online environment, especially when the customer is more involved (e.g. financially) or vulnerable in the purchasing process, thereby giving rise to the need for more cues to win a visitor's trust.

The present study was set out to investigate what could corroborate the premise that colour 'blue' engenders the most trust, as stated by Broeder and Scherp (2017). Specifically, the effect of the web store in two different opposite colours, blue and red, were compared. Different cultural backgrounds with distinct levels of uncertainty avoidance were selected for the present study to investigate if uncertainty avoidance could influence the effect of visual trust cues in an online retail environment. This cross-cultural comparison was based on a sample that consisted of Dutch consumers (from Western Europe) and Russian consumers (from Eastern Europe). According to Hofstede (2021), Russia is a high uncertainty avoidance culture (with a score of 95 on a 0-100 scale). The Netherlands has a lower avoiding uncertainty score of 53. This score indicates that Russian consumers preferably avoid ambiguous or uncertain (online buying) situations as compared to Dutch consumers. Likewise, Broeder and Van Hout (2019) found that Russian consumers were more influenced by strong-tie connections within their (social) network and reported a higher level of uncertainty (i.e. online buying risk) than Dutch consumers. Dutch consumers were more likely than Russian consumers to accept new ideas and products. In addition, Dutch consumers were more willing to try something new or different.

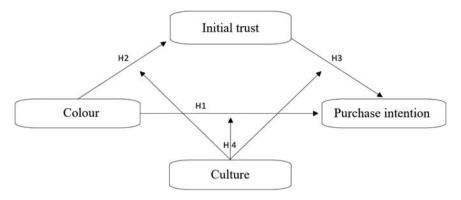
#### Methodology

#### Research questions and hypotheses

Specifically, the research question of this study is formulated as follows: what is the effect of a colour on trust and purchase intention in a web store, differentiated by culturally uncertainty avoidance? This study had a two (colour: red vs. blue) by two (culture: Dutch vs. Russian) between-subjects design. The total conceptual model is illustrated in Figure 1.

The dependent variable was purchase intention. In the conceptual model, trust was assumed to mediate the relationship between colour and purchase intention. Culture was assumed to moderate the relationships between colour, trust and purchase intention. The following hypotheses are proposed (see Figure 1):

Hypothesis 1: The colour of a web store influences the purchase intention of consumers.



**Figure 1.** Conceptual model of the present study.

Hypothesis 2: The colour of a web store influences the trust of consumers.

Hypothesis 3: Trust influences the purchase intention of consumers.

Hypothesis 4: The cultural background (differentiated by uncertainty avoidance) of consumers moderates the relationships between (a) colour and purchase intention, (b) colour and trust, and (c) trust and purchase intention.

#### Sample

In total, 391 participants completed an online survey. The final sample used in the analyses consisted of 279 participants. They described themselves ('To what ethnic group do you belong?') as Dutch or Russian. Their self-identification matched their birth-country and their country-of-living. There were 157 participants from the Netherlands and 122 participants from Russia, including 110 men and 169 women. One Russian participant who was born in lived in the Netherlands was not included in the final data sample. The mean age was 27 years (Age range: 16–60 years). The demographic distributions of the sample per cultural group is given in Table 1.

#### Stimulus material

The participants were asked to imagine that they were 'looking for a simple laptop sleeve'. Then, they saw a picture of a laptop sleeve in the context of an Amazon-like web store

**Table 1.** Demographic information of the sample per cultural group (in percentages).

	Dutch ( $N = 157$ )	Russian ( $N = 122$ )
Gender		
Male	38%	41%
Female	62%	59%
Age		
16–29	76%	80%
30–39	4%	18%
40-60	20%	2%
Education		
High school	12%	20%
Middle/Higher education	62%	20%
University	26%	60%

page. The type of laptop sleeve and the context were considered to be neutral to reduce any distraction or symbolic meaning across cultures. There were two variations of the web store page (see Figure 2). In one condition, the product specifications ('Laptop Sleeve', 'Add to wishlist', 'Size', 'Quantity', and 'Add to cart') were shown in a blue environment. In the other condition, the environment was red. The participants were randomly assigned to one of the two conditions.

#### Measures

Participants responded to the questionnaire items using a 5-point Likert scale, from 1 = 'strongly disagree' to 5 = 'strongly agree'. The items used for the operationalisation of the constructs are given in the Appendix of this paper.

- Purchase intention was measured with one item ('I would like to buy this product').
- Product attitude ('How do you feel about the product?') was answered on a 5-point-scale with contrasting adjective pairs for the hedonic attitude ('irritating/enjoyable' and '(no)fun') and the utilitarian attitude ('(not)informative', and 'pointless/useful').
- Three types of trust were measured with statements derived from Chen and Barnes (2007) and Broeder and Snijder (2019): Initial trust ('This website is trustworthy'), Trustworthiness, familiarity with online transactions, ('Prior online purchase experiences from other websites make me feel comfortable in using this website'), and trust propensity ('It is easy for me to trust a person').
- Uncertainty avoidance was measured with seven items adapted from Jung and Kellaris (2004) (e.g. 'I prefer structured situations to unstructured situations'). This scale had a good internal consistency with Cronbach's  $\alpha = .76$ .
- Online booking experience was checked with two items ('I am familiar with purchasing products online' and 'I have good experience with purchasing products online').
- Colour associations were assessed with one question ('The colour I associate the most with emotion/trust/exclusity ... '). The participants were presented with six coloured squares: light red, dark red, yellow, black, light blue, and dark blue. These associations and colours were investigated in earlier researches by Broeder and Snijder (2019) and Broeder and Wildeman (2020).



**Figure 2.** Laptop sleeve offered in a web store context: left with a blue colour (RGB code = 1A3650), and right with a red colour (RGB code = FF7F7F).



• Finally, as a conditional manipulation check, the participants were asked: 'What was the background colour of the images in the questionnaire?'. The participants were supposed to select the coloured squares of the pertinent condition: blue or red.

#### **Results**

#### **Manipulation checks**

First, a check was done whether the participants correctly identified the web store page they saw. In the blue colour condition, 82% (N = 157) of the 191 participants correctly reported that they saw a blue background. Interestingly, in the red colour condition, only 61% (N = 122) of the 199 participants reported correctly that they saw a red background. The data from those participants that incorrectly identified the background colour of their condition (N = 111) were excluded from the analysis. The final sample for further analyses consisted of 279 participants. The second manipulation check was the attitude towards the presented laptop sleeve. Two-way ANOVAs revealed no significant difference (and interactions) in the utilitarian product attitude between the conditions and the cultural groups. In contrast, there was a significant difference in the hedonic product attitude, F(1, 275) = 4.541, p = .034. The Dutch group had a more positive hedonic attitude towards the laptop sleeve,  $M_{Dut} = 3.02$  and  $SD_{Dut} = 0.77$ , than the Russian group,  $M_{Rus} = 2.92$  and  $SD_{Rus} = 0.85$ . The third manipulation check showed that, on average, both cultural groups reported sufficient experience with online shopping. However, they differed in this respect, F(1, 275) = 18.489, p = .001. The Dutch group had more online shopping experience,  $M_{Dut} = 4.24$  and  $SD_{Dut} = 0.61$ , than the Russian group,  $M_{Rus}$  = 3.90 and  $SD_{Rus}$  = 0.83. The three manipulation checks provided empirical evidence for the successful random assignments of the Dutch and Russian participants to the two conditions. There were some differences between the two cultural groups that should be kept in mind in the hypothesis testing.

#### Hypotheses testing

Overall, blue was associated the most with trust by the Dutch and the Russian participants, both in the blue colour condition (71%) and in the red colour condition (62%). Whereas yellow and black was associated the least with trust (see Table 2).

A regression analysis was performed using the PROCESS procedures (model 59) developed by Hayes (2018). In this analysis, colour was used as the predictor for purchase intention and initial trust was entered as the mediator. Familiarity (trustworthiness) and trust

**Table 2.** Reported colour associations with trust per condition.

•	•	
'This colour I associate the most with trust'	Blue colour condition ( $N = 157$ )	Red colour condition (N = 122)
Light red	19 (12%)	24 (20%)
Dark red	9 (6%)	7 (6%)
Yellow	6 (4%)	8 (6%)
Black	11 (7%)	7 (6%)
Light blue	65 (41%)	48 (39%)
Dark blue	47 (30%)	28 (23%)

propensity were the co-variates. Culture was the moderator. The significance of the effects was tested with bias-corrected and accelerated (BCa) confidence intervals (CI) based on 5000 bootstrap samples. The outcomes of this analysis are presented in Table 3.

Table 3 shows that in the statistical model (depicted in Figure 3), there was no significant direct effect of a different colour (c). For the mediation, the regression coefficient between colour and trust ( $a_1$ ) was not significant. In contrast, there was a significant positive regression coefficient between trust and purchase intention ( $b_1$  with 95% BCa CI [0.09, 0.40]). This coefficient means that with increasing trust in the web store, participants also had a higher purchase intention. Additionally, trustworthiness, based on previous familiarity, had a significant positive effect on trust in the web store ( $f_1$  with 95% BCa CI [0.27, 0.48]). However, familiarity had no significant effect on purchase intention ( $g_1$ ). For trust propensity, no statistically significant effects were observed ( $f_2$  and  $g_2$ ).

An independent t-test confirmed that in the sample of this study, on average, the Russian participants ( $M_{Rus} = 3.40$ ,  $SD_{Rus} = 0.62$ ) were more uncertainty avoidant than the Dutch participants ( $M_{Dut} = 3.11$ ,  $SD_{Dut} = 0.56$ ). This difference, 0.29, was significant (t(277) = -4.04, p < .001, with a bootstrapped BCa 95% CI [-0.43, -0.14]), and represented a medium effect of d = 0.49. This finding for differences in uncertainty avoidance between the Russian and Dutch samples supported the outcomes of the ethnic self-identification measure. The mean purchase intention per condition and per group is visualised in Figure 4. The purchase intention of the Russian sample is lower compared to the Dutch sample. As can be seen in Table 3, this effect of culture on purchase intention was statistically significant  $(b_2)$ . Remarkably, both the Russian and Dutch samples had lower purchase intention in the web store with the red colour (respectively  $M_{Rus} = 3.15$ ,  $SD_{Rus} = 0.99$  and  $M_{Dut} =$ 3.26,  $SD_{Dut} = 0.92$ ), compared to the web store with the blue colour (respectively  $M_{Rus} =$ 3.22,  $SD_{Rus} = 1.04$  and  $M_{Dut} = 3.44$ ,  $SD_{Dut} = 0.92$ ). However, as shown earlier, this effect was not significant (c'). Also, no significant interaction effect was found ( $b_3$ ). This outcome means that the relationships between colour and purchase intention were not moderated by culture.

The mean trust per condition and per culture is plotted in Figure 5. Interestingly, the Russian sample had more initial trust in the web store compared to the Dutch sample. A can be seen in Table 3, this effect of culture on initial trust was statistically significant  $(a_2)$ .

**Table 3.** Regression coefficients, standard errors (*SE*) and model summary information (based on 5000 bootstrap samples) for the effect of the colour model.

					Depende	nt			
		/	M (Initial trust)			<i>Y</i> (P	Y (Purchase intention)		
Independent		Coeff.	SE	р		Coeff.	SE	р	
X (Colour)	a <sub>1</sub>	0.133	0.088	.131	c'	0.143	0.113	.205	
M (Initial trust)		_	_	_	$b_1$	0.239	0.077	.002*	
W (Culture)	$a_2$	0.218	0.088	.014*	b <sub>2</sub>	-0.251	0.113	.028*	
$X \times W$	$a_3$	0.050	0.177	.777	$b_3$	-0.103	0.227	.651	
$M \times W$		_	_		$b_4$	-0.154	0.142	.278	
C1 (Familiarity)	$f_1$	0.381	0.049	<.001*	$g_1$	0.124	0.069	.076	
C2 (Propensity)	$f_2$	0.059	0.044	.182	$g_2$	0.059	0.056	.299	
Constant	i <sub>M</sub>	-1.484	0.203	<.001*	i <sub>v</sub>	2.690	0.284	<.001*	
		$R^2 = 0.22,$			,	$R^2 = 0.10$ ,			
	F(5,273) = 15.503, p < .00		001*	F(7,271) = 4.467, p < .001*					

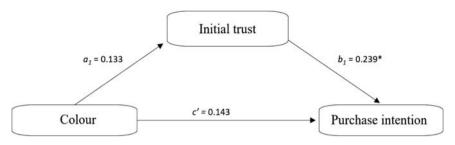
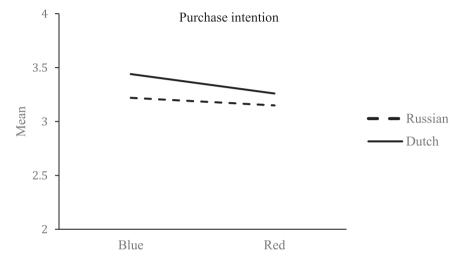


Figure 3. Model of colour as a predictor of purchase intention, mediated by trust.

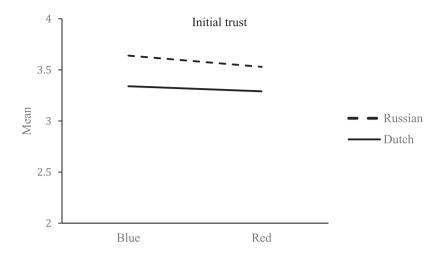


**Figure 4.** The effect of colour on purchase intention per culture. Means on a 5-point-scale, 1 = min. (completely disagree) and 5 = max. (completely agree).

Additionally, both the Russian and Dutch samples had on average lower trust in the web store with the red colour (respectively  $M_{Rus} = 3.53$ ,  $SD_{Rus} = 0.82$  and  $M_{Dut} = 3.29$ ,  $SD_{Dut} = 0.79$ ), compared to the web store with the blue colour (respectively  $M_{Rus} = 3.64$ ,  $SD_{Rus} = 0.72$  and  $M_{Dut} = 3.34$ ,  $SD_{Dut} = 0.87$ ). Because, no significant interaction effect was found  $(a_3)$ , the relationships between colour and trust were not moderated by culture.

#### **Conclusions**

This study investigated the effects of colour in a web store. Does the colour 'blue' influence trust in the web store, and does this influence lead to higher purchase intention in the web store? In addition, what is the influence of the cultural background of consumers? A direct effect of the colour 'blue' or 'red' on purchase intention was not found (Hypothesis 1). Blue was associated the most with trust; however, this did not result in higher initial trust in the web store (Hypothesis 2). In this study, an indirect effect of colour on purchase intention was found. The findings showed that initial trust played a mediating role in the influence of the colour on purchase intention. Specifically, more initial trust led to a higher purchase intention. In addition, trustworthiness, that is



**Figure 5.** The effect of colour on initial trust per culture. Means on a 5-point-scale,  $1 = \min$ . (completely disagree) and  $5 = \max$ . (completely agree).

familiarity with online transactions, led to more trust in a specific web store. In contrast, trust propensity, which is a personality attribute, did not affect purchase intention (Hypothesis 3). The assumed cultural differences in uncertainty avoidance were confirmed for the Dutch and Russian samples in this study. Interestingly, the more uncertainty-avoidant Russian participants had more initial trust in the web store. However, this higher trust did not lead to higher purchase intentions. The purchase intention of the Russians was lower compared to the Dutch. There was no evidence of cultural moderation of the relationship between colour and purchase intention (Hypothesis 4a), the relationship between colour and initial trust (Hypothesis 4b) and the relationship between initial trust and purchase intention (Hypothesis 4c).

#### Research limitations and further research

Some limitations of the present study may serve as valuable input for future research. First, the present study did not control all the other elements that could influence colour perception in the mind (Aslam, 2006). While selecting the participants, the research did not account for consumers' gender, educational level, region within a country, religious background or the possibility of them being colour blind. In addition, it should be noted that the colour appeal of the participants towards a certain colour might influence their perceived trustworthiness of that colour. When selecting participants, future research should attempt to maximise control over these elements.

Secondly, in the experiment, the web store characteristics were fine-tuned to ensure a realistic and professional-looking environment in which the focus was on colour. For that reason, elements such as price, product information and reviews were not incorporated in the stimuli. Yet, these elements could influence online purchase intention. Consumers may rely on product information or the price of the product while making a consideration to purchase it. Consequently, this information could enhance feelings of trust. Future

research could perform a conjoint study in which colour displayed in an online retail environment is investigated in combination with, for example, product information or price. By this, the impact of colour in relation to other elements could be assessed.

Finally, as indicated by Broeder and Snijder (2019), light-valued colours stand out less in an online retail environment that is predominantly white as compared to dark-valued colours. This may result in the blending of the light red colour with the online retail environment. This is in line with a study by Geboy (1996), which revealed that colours with added shades of black were more visible as compared to tinted colours. However, the results of the present study did not find significant differences between the effect caused by the colours 'light red' and 'dark blue'. Future research must investigate as to why in the study by Broeder and Wildeman (2020), light red stood out more than dark red (for emotion) as opposed to the study by Broeder and Snijder (2019) in which dark blue stood out more than light blue (for trust). It is recommended to analyse the degree of localisation of web stores' atmospheres in global e-commerce. Consumers from different cultural backgrounds might not feel and behave the same in a differently coloured, online retail environment.

#### **Disclosure statement**

No potential conflict of interest was reported by the author(s).

#### **Notes on contributors**

Peter Broeder is affiliated with the Department of Communication and Cognition at the Tilburg University, the Netherlands. He investigates socio-psycholinguistic aspects of intercultural online marketing communications and consumer behaviour.

Lisanne van Doremalen is working in the field of marketing and communication in both digital and traditional media.

#### ORCID

Peter Broeder http://orcid.org/0000-0001-6274-2040 Lisanne van Doremalen http://orcid.org/0000-0002-7712-5173

#### References

Al Kailani, M., & Kumar, R. (2011). Investigating uncertainty avoidance and perceived risk for impacting Internet buying: A study in three national cultures. International Journal of Business and Management, 6(5), 76-92. https://doi.org/10.5539/ijbm.v6n5p76

Aslam, M. (2006). Are you selling the right colour? A cross-cultural review of colour as a marketing cue. Journal of Marketing Communications, *12*(1), 15-30. https://doi.org/10.1080/ 13527260500247827

Bellizzi, J., & Hite, R. (1992). Environmental colour, consumer feelings, and purchase likelihood. Psychology and Marketing, 9(5), 347-363. https://doi.org/10.1002/mar.4220090502

Broeder, P. (2020). Culture, privacy and trust in e-commerce. Marketing from Information to Decision Journal, 3(1), 1–13. https://doi.org/10.2478/midj-2020-0002

Broeder, P., & Scherp, E. (2017). Colour preference of online consumers: A cross-cultural perspective. Marketing from Information to Decision Journal, 1(1), 5-15. https://doi.org/10.2478/midj-2018-0001



- Broeder, P., & Snijder, W. (2019). Colour in online advertising: Going for trust, which blue is a must? Marketing from Information to Decision Journal, 2(1), 53–62. https://doi.org/10.2478/midj-2019-0001
- Broeder, P., & Van Hout, A. (2019). When friends recommend: Online purchasing behaviour of Russian and Dutch people when prompted by recommendations from facebook friends. *Russian Journal of Communication*, *11*(3), 1–13. https://doi.org/10.1080/19409419.2019.1656545
- Broeder, P., & Wildeman, N. (2020). The colour red for emotion in cross-cultural e-commerce. *Eurasian Journal of Business and Economics*, 13(25), 75–89. https://doi.org/10.17015/ejbe.2020. 025.05
- Chakraborty, R., Lee, J., Bagchi-Sen, S., Upadhyaya, S., & Rao, H. R. (2016). Online shopping intention in the context of data breach in online retail stores: An examination of older and younger adults. *Decision Support Systems*, 83(2), 47–56. https://doi.org/10.1016/j.dss.2015.12.007
- Chang, H., & Wen, S. (2008). The impact of online store environment cues on purchase intention: Trust and perceived risk as a mediator. *Online Information Review*, *32*(6), 818–841. https://doi.org/10.1108/14684520810923953
- Chen, Y., & Barnes, S. (2007). Initial trust and online buyer behaviour. *Industrial Management & Data Systems*, 107(1), 21–36. https://doi.org/10.1108/02635570710719034
- Cheng, F., Wu, C., & Yen, D. (2009). The effect of online store atmosphere on consumer's emotional responses: An experimental study of music and colour. *Behaviour & Information Technology*, *28*(4), 323–334. https://doi.org/10.1080/01449290701770574
- Clarke, T., & Costall, A. (2008). The emotional connotations of colour: A qualitative investigation. *Colour Research & Application*, *33*(5), 406–410. https://doi.org/10.1002/col.20435
- Colquitt, J. A., Scott, B. A., & LePine, J. A. (2007). Trust, trustworthiness, and trust propensity: A meta-analytic test of their unique relationships with risk taking and job performance. *Journal of Applied Psychology*, 92(4), 909–927. https://doi.org/10.1037/0021-9010.92.4.909
- Cyr, D., Head, M., & Larios, H. (2010). Colour appeal in website design within and across cultures: A multi-method evaluation. *International Journal of Human-Computer Studies*, 68(1-2), 1–21. https://doi.org/10.1016/j.ijhcs.2009.08.005
- Ganguly, B., Dash, S., Cyr, D., & Head, M. (2010). The effects of website design on purchase intention in online shopping: The mediating role of trust and the moderating role of culture. *International Journal of Electronic Business*, 8(4-5), 302–330. https://doi.org/10.1504/IJEB.2010. 035289
- Geboy, L. D. (1996). Colour makes a better message. *Journal of Health Care Marketing*, *16*, 52–55. Gorn, G., Chattopadhyay, A., Sengupta, J., & Tripathi, S. (2004). Waiting for the web: How screen colour affects time perception. *Journal of Marketing Research*, *41*(2), 215–225. https://doi.org/10.1509/jmkr.41.2.215.28668
- Hall, R., & Hanna, P. (2004). The impact of web page text-background colour combinations on readability, retention, aesthetics and behavioural intention. *Behaviour & Information Technology*, 23(3), 183–195. https://doi.org/10.1080/01449290410001669932
- Harridge-March, S. (2006). Can the building of trust overcome consumer perceived risk online? *Marketing Intelligence & Planning*, 24(7), 746–761. https://doi.org/10.1108/02634500610711897
- Hayes, A. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.
- Hofstede, G. (2021). Country Comparison. https://www.hofstede-insights.com
- Hwang, Y., & Lee, K. (2012). Investigating the moderating role of uncertainty avoidance cultural values on multidimensional online trust. *Information & Management*, 49(3-4), 171–176. https://doi.org/10.1016/j.im.2012.02.003
- Jung, J., & Kellaris, J. (2004). Cross-national differences in proneness to scarcity effects: The moderating roles of familiarity, uncertainty avoidance, and need for cognitive closure. *Psychology and Marketing*, *21*(9), 739–753. https://doi.org/10.1002/mar.20027
- Kauppinen-Räisänen, H. (2014). Strategic use of colour in brand packaging. *Packaging Technology and Science*, 27(8), 663–676. https://doi.org/10.1002/pts.2061



- Kim, D., Ferrin, D., & Rao, H. (2008). A trust-based consumer decision-making model in electronic commerce: The role of trust, perceived risk, and their antecedents. *Decision Support Systems*, 44(2), 544–564. https://doi.org/10.1016/j.dss.2007.07.001
- Kim, Y., & Peterson, R. A. (2017). A meta-analysis of online trust relationships in e-commerce. *Journal of Interactive Marketing*, 38, 44–54. https://doi.org/10.1016/j.intmar.2017.01.001
- Koo, D., & Ju, S. (2010). The interactional effects of atmospherics and perceptual curiosity on emotions and online shopping intention. *Computers in Human Behavior*, *26*(3), 377–388. https://doi.org/10.1016/j.chb.2009.11.009
- Kooli, K., Ben Mansour, K., & Utama, R. (2014). Determinants of online trust and their impact on online purchase intention. *International Journal of Technology Marketing*, *9*(3), 305–319. https://doi.org/10.1504/IJTMKT.2014.063858
- Koufaris, M., & Hampton-Sosa, W. (2004). The development of initial trust in an online company by new customers. *Information & Management*, *41*(3), 377–397. https://doi.org/10.1016/j.im.2003.08. 004
- Lee, S., & Rao, V. (2010). Colour and store choice in electronic commerce: The explanatory role of trust. *Journal of Electronic Commerce Research*, 11(2), 110–126.
- Lichtlé, M. (2007). The effect of an advertisement's colour on emotions evoked by an ad and attitude towards the ad. *International Journal of Advertising*, 26(1), 37–62. https://doi.org/10.1080/02650487.2007.11072995
- Lim, K., Leung, K., Sia, C., & Lee, M. (2004). Is eCommerce boundary-less? Effects of individualism-collectivism and uncertainty avoidance on Internet shopping. *Journal of International Business Studies*, 35(6), 545–559. https://doi.org/10.1057/palgrave.jibs.8400104
- Madden, T., Hewett, K., & Roth, M. (2000). Managing images in different cultures: A cross-national study of colour meanings and preferences. *Journal of International Marketing*, 8(4), 90–107. https://doi.org/10.1509/jimk.8.4.90.19795
- McKnight, D., & Chervany, N. (2002). What trust means in e-commerce customer relationships: An interdisciplinary conceptual typology. *International Journal of Electronic Commerce*, *6*(2), 35–59. https://doi.org/10.1080/10864415.2001.11044235
- Miyazaki, A., & Fernandez, A. (2001). Consumer perceptions of privacy and security risks for online shopping. *Journal of Consumer Affairs*, 35(1), 27–44. https://doi.org/10.1111/j.1745-6606.2001. tb00101.x
- Muhammad, F. (2018). Ultimate guide to colour psychology. https://instapage.com/blog/ultimate-guide-to-colour-psychology
- Pelet, J., & Papadopoulou, P. (2012). The effect of colours of e-commerce websites on consumer mood, memorization and buying intention. *European Journal of Information Systems*, 21(4), 438–467. https://doi.org/10.1057/ejis.2012.17
- Roschk, H., Loureiro, S., & Breitsohl, J. (2017). Calibrating 30 years of experimental research: A meta-analysis of the atmospheric effects of music, scent, and colour. *Journal of Retailing*, *93*(2), 228–240. https://doi.org/10.1016/j.jretai.2016.10.001
- Singh, S. (2006). Impact of colour on marketing. *Management Decision*, 44(6), 783–789. https://doi.org/10.1108/00251740610673332
- Spence, C., Puccinelli, N., Grewal, D., & Roggeveen, A. (2014). Store atmospherics: A multisensory perspective. *Psychology & Marketing*, *31*(7), 472–488. https://doi.org/10.1002/mar.20709
- Wang, Y., & Emurian, H. (2005). An overview of online trust: Concepts, elements, and implications. *Computers in Human Behaviour*, *21*(1), 105–125. https://doi.org/10.1016/j.chb.2003.11.008.



# Appendix: Operationalisation of the constructs.

Culture	In which country were you born?				
	In what country do you live at the moment?				
	To what ethnic group do you belong?				
Purchase intention	I would like to buy this product.				
Hedonic product attitude	How do you feel about the product?				
,	irritating	enjoyable			
	no fun	fun			
Utilitarian product attitude	How do you feel about the product?				
•	not informative	informative			
	pointless	useful			
Initial trust	This website is trustworthy.				
Trustworthiness/familiarity	Prior online purchase experiences from other websites make me feel comfortable in using this website.				
Trust propensity	It is easy for me to trust a person.				
Uncertainty avoidance	I prefer structured situations to unstructured situations.				
	I prefer specific instructions to broad guidelines.				
	I tend to get anxious easily when I don't know an outcome.				
	I feel stressful when I cannot predict consequences.				
	I would not take risks when an outcome ca predicted.	annot be			
	I believe that rules should not be broken for mere pragmatic reasons.				
	I don't like ambiguous situations.				
Online purchase experience	I am familiar with purchasing products online.				
,	I have good experiences with purchasing products online.				
Manipulation check	This colour I associate the most with trust				
·	What was the background colour of the images in this questionnaire?				