Does social proof and scarcity work for opera lovers?

A study into the effectiveness of online persuasion cues on consumer responses within the online ticketing store

Master Thesis
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Abstract

Online shopping is very popular nowadays. By making use of Cialdini's principles of persuasion, many companies try to persuade consumers to buy their products or services on their website. Despite the frequent usage of the principles of persuasion, little is known within the academic literature about the online effectiveness of these principles on consumer responses. The goal of this study is to investigate whether social proof and scarcity heuristics have an influence on consumer responses within the online ticketing store. Stimulus material of the ticketing website of Dutch National Opera, in which different persuasion messages were implemented, was created. In a 2 (social proof vs. no social proof message) x 2 (scarcity vs. no scarcity message) x 2 (orange vs. green text) between subject experimental research design consumers' time pressure, product value, and purchase intention were measured with an online questionnaire. In total, 268 Dutch visitors, with a high educational level and who regularly visit opera performances, of Dutch National Opera participated in this study. The results demonstrated a positive effect of scarcity on the level of time pressure. However, a negative effect of scarcity on the level of purchase intention was found. In addition, effects of interaction between color and scarcity on time pressure and of color and social proof on purchase intention were found. Based on the literature, it was expected that persuasion knowledge and uncertainty avoidance had a moderating effect. This was only the case for uncertainty avoidance, meaning that high uncertainty avoidance resulted in a higher level of time pressure after exposure to the social proof and scarcity message, while for low uncertainty avoidance, only the scarcity message increased the level of time pressure. To conclude, persuading people with the principles of persuasion should be used with caution, because it can backfire, and especially scarcity can have a negative effect on the purchase intention. However, this effect was only visible for this specific target group of highly educated and senior aged opera visitors. Therefore, more research is needed to test the online effectiveness of the principles of persuasion in different areas and for more product and service categories. The findings of this study can help marketers to understand the online effectiveness of the principles of persuasion on consumers' behavior and can be used in the development and testing of online marketing communication strategies.

Keywords: online persuasion, social proof, scarcity, time pressure, uncertainty avoidance, persuasion knowledge, marketing communication, culture, opera.

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Ten years ago, after finishing my VMBO, I never would have thought that I would be able to go to University to get my Master's degree. But here we are! This research project represents the ending of this long period of hard work and studying.

After I finished the master course 'Persuasive Communication' last year, I read many books and articles about this interesting topic: persuasion. Everyday we are exposed to persuasive messages, both offline and online. Persuasion is almost everywhere. Therefore, during my search and orientation for a research topic, I decided to focus on the effectiveness of online persuasion techniques on consumer responses. During the past 5 months, I learned a lot. I would like to express my gratitude to all those who provided me with their help, feedback, and time.

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1. Introduction

In recent years, internet connectivity, usage, and online shopping have risen dramatically (Lissitsa & Kol, 2016). Hence, online shopping is very popular nowadays. In 2015, almost 71 percent of the Dutch population bought a product or service online (CBS, 2016). Furthermore, between 2007 and 2015, the amount of online stores has doubled in the Netherlands (CBS, 2016). Following these numbers, a lot of companies try to sell their products or services online. That means that there are many websites where people can buy (more or less) the same product. So how can marketers influence visitors to buy a certain product or service from their online store?

Horvath (2011) stated that "every website – including government and non-profit websites – is trying to persuade its visitors of something" (p. 568). For marketers this is known as persuading a visitor to complete a conversion. Examples of conversions are: downloading an information file, signing up for a newsletter, or buying a product. Persuasion can play an important role to convince people to complete a conversion. Therefore, many companies (e.g. Amazon, Facebook, Google, LinkedIn, Booking.com) attempt to improve their websites by conducting online experiments (e.g. a/b-tests) to enhance the conversion rates (Kohavi, Deng, Longbotham, & Xu, 2014).

Many persuasion attempts exist in the field of persuasion that companies can use to influence customers to behave in a certain manner. Cialdini (2001) identified six 'universal principles' of persuasion, namely: commitment and consistency, reciprocation, social proof, authority, liking, and scarcity (Cialdini, 2001). Different companies use some of the principles of persuasion on their website. For instance, the following message is presented on the website of EasyJet: 'Hurry! Only a few seats left'. This scarcity message is used to influence the purchase intention of consumers.

Despite the frequent usage of persuasion heuristics by companies, online persuasion is still relatively understudied in the academic literature. According to Slattery, Simpson, and Utesheva (2013), "these techniques have rarely been tested in order to determine if they are as effective in online contexts as offline, or to understand how specific techniques can effectively be recreated online" (p. 4). Although different studies have focused on the online effectiveness of scarcity and social proof heuristics on consumer responses and purchase intention of clothing, electronics, holidays, and consumption goods (Gierl, Plantsch, & Schweidler, 2008; Jeong & kwon, 2012; Klaver, 2015), little is known about the effectiveness of these heuristics on the purchase intention and product value of consumers in the online ticketing context of the culture and entertainment industry. Therefore, this study aims to explore the effect of two different persuasion heuristics on consumer responses in the online ticketing industry. In other words, this study attempts to test if two persuasion variables (i.e., scarcity and social

proof) affect consumers' time pressure, product value, and purchase intention. The scarcity and social proof heuristics are chosen because these are widely used in online shopping stores, and have been proven to be effective to increase customers' purchase intention in the offline context (Wann, Bayens, Driver, 2004; Griskevicius, Goldstein, Mortensen, Sundie, Cialdini, & Kenrick, 2009; Aggarwal, Jun, & Huh, 2011; Kaptein & Eckles, 2012).

1.1. Focus of the research

The goal of this study is to find out whether the social proof and scarcity heuristics can be used to persuade visitors of Dutch National Opera & Ballet to buy a ticket in the online ticketing store. In order to examine the different conditions, an experimental study will be conducted in which different persuasion heuristics are manipulated. Based on the goal of this study, the following research question is formulated:

Research question: What are the effects of the social proof heuristic and scarcity heuristic on the customers' time pressure, product value, and purchase intention in an online e-commerce ticketing store?

This study contributes theoretically to the effectiveness of the use of the principles of persuasion on customer responses in the online ticketing store. Furthermore, the results of this study may provide valuable information for online marketers to improve the persuasiveness of their e-commerce website.

1.2. Dutch National Opera & Ballet

Dutch National Opera & Ballet is an institute that produces and presents opera and ballet productions and performances. This institute, which is based in Amsterdam, operates at national and international level and is one of the largest cultural institutes in the Netherlands (Dutch National Opera & Ballet, 2016). Most of the visitors of this institute are highly educated and are living in the west part of the Netherlands. This study will be conducted among the target group of Dutch National Opera.

2. Theoretical Framework

In this chapter, the theoretical background of the principles of persuasion, the justification of the variables, the moderators, and the hypotheses of this study are described. The research model of this study is presented at the end of this chapter.

2.1. Principles of persuasion

Everyday people are exposed to persuasive messages of companies or individuals. Persuasion is everywhere. So how can persuasion be defined? There are many definitions of persuasion, but according to the view of Gass and Seiter (2014), "Persuasion involves one or more persons who are engaged in the activity of creating, reinforcing, modifying, or extinguishing beliefs, attitudes, intentions, motivations, and/or behaviors within the constraints of a given communication context" (p. 33). In other words, influencing people's beliefs, behavior, and opinions in a certain way.

A lot of techniques exist in the field of persuasion to influence people to behave in a certain way. However, research discovered that there are six universal principles of persuasion that explain how one person might influence another (Cialdini & Goldstein, 2002). This research distinguished the following six principles of persuasion: liking, reciprocation, social proof, consistency, authority, and scarcity. Recently Cialdini acknowledged that there is also a seventh principle of persuasion, called unity. This is related to the shared identity between the persuader and the person being persuaded (Cialdini, 2016).

Persuasion messages or tactics used by marketers or persons can be assigned to one of the six principles of persuasion. These principles are effective because they serve as heuristics, in other words, as mental shortcuts to generate a distinct kind of automatic, mindless compliance from people (Cialdini, 2006; Muscanell, Guadagno, & Murphy, 2014). The science of these principles can be taught, learned, and applied to increase the persuasive impact of people (Cialdini, 2001). Although commitment and consistency, reciprocation, authority, and liking are not part of this study, they will be briefly described in the next paragraph to explain all the principles of persuasion.

We like people who like us. The liking principle states that people are more inclined to say yes to a request of a person they like. Sales people often seek for similar personal characteristics between them and consumers. Why? Because similarities draw people together. Another way to persuade people is by using the reciprocity principle. A well-known example of reciprocity is the free product sample in the supermarket. After receiving the sample, we feel much more obligated to give something back, for instance, to buy the product. The consistency principle states that people want to behave in a consistent way. For example, people who have

announced their commitment to a political party are more likely to behave consistently with that commitment. Last, according to the authority principle, people tend to be influenced by authorities (e.g. professors, doctors) with an expert opinion about certain things within their field of profession (Cialdini, 2001; Cialdini & Goldstein, 2002).

2.2. Social Proof

The HMRC department responsible for the collection of taxes in the United Kingdom included the following sentence in their letter to late payers: "Nine out of ten people in Britain pay their tax on time". As a result, the letter with the new sentence collected £5.6 billion more overdue revenue than had been collected in the previous year without that sentence (Martin, 2012). Similar results were found in a study that examined the effectiveness of signs that requests hotel guests to reuse their towels. Towel reuse rises by providing hotel guests in the bathroom of their room with the sign "the majority of guests in this room reuse their towels" (Goldstein, Cialdini, & Griskevicius, 2008).

The increase in compliance of the above studies could be explained by the social proof principle. The social proof principle implies that people strongly rely on other people for cues on how to act, think, and feel, especially in uncertain situations (Cialdini & Goldstein, 2002). Put it another way, we tend to follow the opinions and behaviors of those around us who are similar. Opera houses have been familiar with the social proof principle for decades. For instance, in the 19th century, the French theatre and opera hired, so-called, 'claques' to applaud during the encore of a performance (Lupyan & Rifkin, 2003). As a result, the audience followed the behavior of the 'claques'.

The social proof principle can direct people into a certain direction by stating what similar others are doing, which in turn reduces uncertainty among people because it's emphasis on the fact that many other people have made the same choice. For example, the positive reviews of others about a new movie may serve as a 'cue' of social evidence. Because if many others are positive about a new movie, you are much more inclined to watch that movie. Consequently, marketers use the social proof principle to inform people that a product is a 'best seller' or 'very popular' by displaying positive product evaluations (Kaptein & Eckles, 2012).

In a field study conducted in a set of restaurants in China, the demand of dishes labeled as 'the 5 most popular dishes' (sorted by number of plates sold), increased by 13 to 20 percent as opposed to the control condition without the ranking information (Cai, Chen, & Fang, 2009). Therefore, restaurants also use the social proof principle (Cialdini & Goldstein, 2002). For instance, most of the time there are plenty of tables available in a

popular restaurant in the Dutch town Enschede. This restaurant, called 'Happy Italy', limits the number of people who are allowed to enter the restaurant. The long waiting line serves as a quality and popularity cue for customers, and attracts the attention of those walking past the restaurant as well.

The social proof principle is also effective in the e-commerce industry. Jeong and Kwon (2012) found in their study that the purchase intention of respondents who were exposed to an online popularity claim (e.g., 94% of consumers bought this product after viewing this site), attached to an USB stick, was higher than those who were not exposed to the popularity claim. Booking.com uses the social proof principle on their website. 'Booked 27 times today', '6 people are looking at this moment', and the '8.7 fabulous' review score based on 4,448 reviews are examples of social proof. This indicates that this is a very 'popular' hotel and that booking a room at this hotel is a 'save' choice because many others have booked a room and expressed their positive opinions in a review. Figure 2.1 presents the used social proof heuristics of Booking.com on their website.
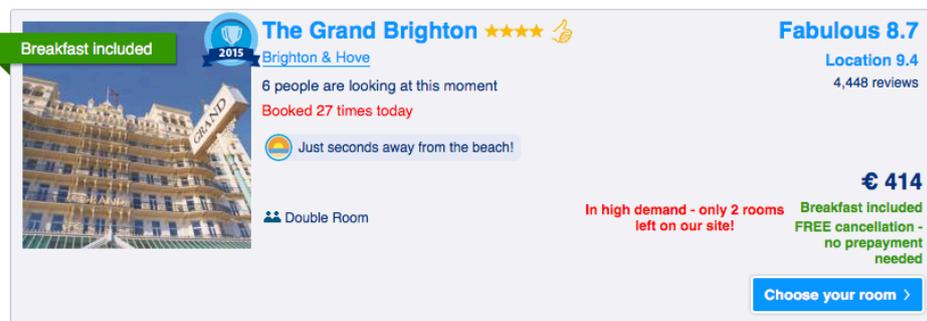

Figure 2.1. Booking.com – Scarcity and Social proof heuristics.

Based on the literature of the social proof principle, the following hypothesis is formulated:

> **Hypothesis 1:** *Including the social proof message will increase the product value and purchase intention compared to the absence of the social proof message.*

2.3. Scarcity

People prefer products or services that are difficult to obtain. According to Cialdini and Goldstein (2002) "items and opportunities that are in short supply or unavailable tend to be more desirable to consumers than are those times that are plentiful and more accessible" (p. 46). A well-known example of the effectiveness of the scarcity principle is the cookie experiment conducted by Worchel, Lee, and Adewole (1975). In their study participants were asked to rate the quality and attractiveness of cookies in a jar. In the abundant condition respondents were

given a jar with ten cookies. In the scarcity condition participants were given a jar with two cookies. The cookies in the scarcity condition were rated as more desirable than cookies in the abundant condition. However, in another condition of the study, respondents initially received ten cookies which were then reduced to two cookies. The cookies in this condition were evaluated as more valuable than the other two conditions.

The scarcity principle implicitly communicates to us 'what is scarce is good' (Dijksterhuis, Smith, Van Baaren, & Wigboldus, 2005). Products or services that are 'scarce' serve as a cue for quality because it is perceived as 'better' than things that are easy to possess (Cialdini, 2006). According to Brock's (1968) commodity theory, "any commodity will be valued to the extent that it is unavailable" (p. 246). Put it another way, the theory implies that restricted items will be more valued than abundant items. Hence, marketers frequently use the scarcity principle to increase the subjective desirability and value of their products or services with phrases like "limited release" or "limited time only" (Lynn, 1991; Jung & Kellaris, 2004; Gierl, Plantsch, & Schweidler, 2008).

People love the freedom of having a choice, so when things are hard to possess because of limited supply, people want the scarce item even more than before (Cialdini, 2006). Why? Because "losses loom larger than gains" (Kahneman & Tversky, 1979, p. 279). In other words, losses have a greater influence on choices than rewards (Boyce, Wood, Banks, Clark, & Brown, 2013). Thus, the scarcity principle can communicate to people that they 'lose something' if they do not act now.

According to Gierl and Huettl (2010), scarcity can be classified into two categories: scarcity due to supply or due to demand. The authors consider "limited edition" products as an example for scarcity due to supply, while messages like "due to high demand nearly sold out" or "already 80% of our stock sold" were used as examples for scarcity due to demand. Marketers can also use the scarcity in time tactic. A well-known example of the scarcity in time tactic is the following message: "Quick! Get the product before they're all sold out". The limited-time tactic can be considered as scarcity due to supply because of the time restriction of the availability of the offer (Gierl, Plantsch, & Schweidler, 2008).

The scarcity principle is frequently used online. The international airline company EasyJet uses the scarcity principle to motivate and persuade consumers to book a flight. For instance, the following message is included on their website: *Hurry! Only 3 seats left at this price'*. Booking.com uses the scarcity due to demand tactic on their booking site. Figure 2.1 presents the scarcity message of Booking.com and figure 2.2 presents the scarcity message of EasyJet used on their sites.

Figure 2.2. EasyJet - Scarcity heuristic.

The scarcity examples above tell consumers that they have to buy the product immediately or they will not be able to purchase the product in the future (Wu, Lu, Wu, & Fu, 2012). This study will focus on scarcity due to limitation because only a certain amount of tickets is available for an opera performance. Based on the literature of the scarcity principle, the following hypothesis is formulated:

> **Hypothesis 2:** *Including the scarcity message will increase the product value and purchase intention compared to the absence of the scarcity message.*

2.4. Persuasion knowledge

Everyday people are exposed to many persuasive messages on television, internet, billboards, or in stores. Therefore, across time, consumers develop personal knowledge about persuasion attempts and tactics (Friestad & Wright, 1994). The activation of this 'persuasion knowledge' involves suspicion about the marketer's motives, skepticism toward advertising messages, and perceptions of companies or marketers as deceptive or manipulative (Kirmani & Zhu, 2007). Consequently, this knowledge can help the consumer to know how, when, and why marketers try to influence people, which in case can help the consumer to adaptively respond to resist these persuasion attempts (Friestad & Wright, 1994; Tutaj & van Reijmersdal, 2012).

In this study, the social proof and scarcity heuristics are persuasive messages to influence the purchase intention and product value of consumers. Therefore, the level of persuasion knowledge is included as a moderator in this study to examine the effect of the persuasion messages on the dependent variables. Consequently, the following hypothesis will be tested:

> **Hypothesis 3:** *A high level of persuasion knowledge will reduce the effect of social proof and scarcity messages on time pressure, product value, and purchase intention as compared to a low level of persuasion knowledge.*

2.5. Uncertainty avoidance

As already described in paragraph 2.2, people tend to follow the behaviors and opinions of peers, especially in uncertain situations (Cialdini & Goldstein, 2002). The influence of friends who can inform you with their experiences and perceptions can reduce the level of uncertainty (Hwang & Lee, 2012). The uncertainty avoidance dimension is therefore related to this study, as it can be defined as "the extent to which people within a culture are made nervous by situations which they perceive as unstructured, unclear, or unpredictable" (Hofstede, 1986, p. 308). For instance, a low score on uncertainty avoidance indicates that people are more willing to take risks and a high score indicates that people are not willing to take risks.

Jung and Kellaris (2004) found in their study that the influence of scarcity on purchase intention was more pronounced among individuals who scored high on uncertainty avoidance. The explanation is that people with high levels of uncertainty avoidance rely more on decision heuristics to avoid uncertainty (Jung & Kellaris, 2004). For example, if a person sees that there are only a few tickets left for a concert, he/she is much more inclined to purchase a ticket to reduce the level of uncertainty. Uncertainty avoidance is included as a moderator to examine the effect of the persuasion messages on the dependent variables of this study. Therefore, the following hypothesis can be formulated:

> *Hypothesis 4: A high level of uncertainty avoidance will positively increase the effect of social proof and scarcity messages on time pressure, product value, and purchase intention as compared to a low level of uncertainty avoidance.*

2.6. Time Pressure

If you want to visit a concert on a specific date and you see the following messages presented on the website: 'only 6 tickets left' and 'popular: 45 tickets booked today', what do you do? Do you order the tickets immediately or do you wait a couple of hours or days to discuss this idea with your partner? The variable time pressure is related to this study because decision-making during the purchase process of tickets is time pressured. Scarcity messages can tell consumers that they have to buy a product immediately or they will not be able to purchase the product in the future (Wu, et al., 2012). Therefore, time pressure is included as a mediator to examine if the effect of the persuasion messages on the dependent variables of this study is mediated by time pressure. Hence, the following hypotheses can be formulated:

Hypothesis 5a: Social proof and scarcity messages will increase time pressure.

Hypothesis 5b: Time pressure will increase the product value and purchase intention.

2.7. Color

Before the research model is presented in the next paragraph, the third variable 'text color' will be introduced. The colors green and orange are part of the corporate identity of Dutch National Opera. This institute uses the text color green and orange on their website to provide visitors with ticketing information. Therefore, from a practical perspective, it is important for this institute to know whether there is a difference between the effectiveness of orange-colored or green-colored persuasive messages on the dependent variables of this study.

Color is an important element of corporate and marketing communication because it influences consumer responses, such as purchase intention, consumption behavior, and preferences (Aslam, 2006). According to Kwallek, Soon, & Lews (2007), "warm colors, such as red, are assumed to have more arousing effects on human responses than cool colors, such as green and blue" (p.130). Furthermore, colors also have different meanings, for example, the (attention-getting) color red is associated with sexual arousal, danger, and excitement, orange is a high-energy color and is associated with appetitive and power, while green is related to health, refreshment, and the environment (Kardes, Cline, & Cronley, 2011). Therefore, it can be expected that warm-colored messages (e.g red) will have a stronger effect on consumer responses than cool-colored messages (e.g. green).

Different companies use some of the principles of persuasion in combination with color on their website. For instance, Booking.com uses the color red (figure 2.1) and EasyJet uses the color orange (figure 2.2) to attract the attention for their scarcity messages. Nevertheless, little is known within the academic literature about the effectiveness of persuasive messages in combination with color. Therefore, from a theoretical view, it is also worth to investigate if it makes sense to vary in text color. Hence, the following hypothesis can be presented:

Hypothesis 6: Orange-colored social proof and scarcity messages will have a greater effect on time pressure, product value, and purchase intention as compared to the green-colored social proof and scarcity messages.

2.8. Research model

Figure 2.3 presents the experimental research model based on the theoretical framework of this study. The independent variables are social proof, scarcity, and text color. The goal of the ticketing website of Dutch National Opera is to sell tickets. Hence, the dependent variable purchase intention is included in this study. Purchase

intention measures the likelihood that a respondent is going to purchase a ticket. The dependent variable product value is included because scarce items will be more valued than abundant items (Brock, 1968). How will a respondent value the tickets under persuasion circumstances? This research tries to find an answer to that question. The effects of social proof and scarcity on the dependent variables might be only visible under certain circumstances. Therefore, the following moderators are included in this study: persuasion knowledge and uncertainty avoidance. Furthermore, time pressure is included as a mediator to test if the effect of the independent variables on the dependent variables is mediated by time pressure.
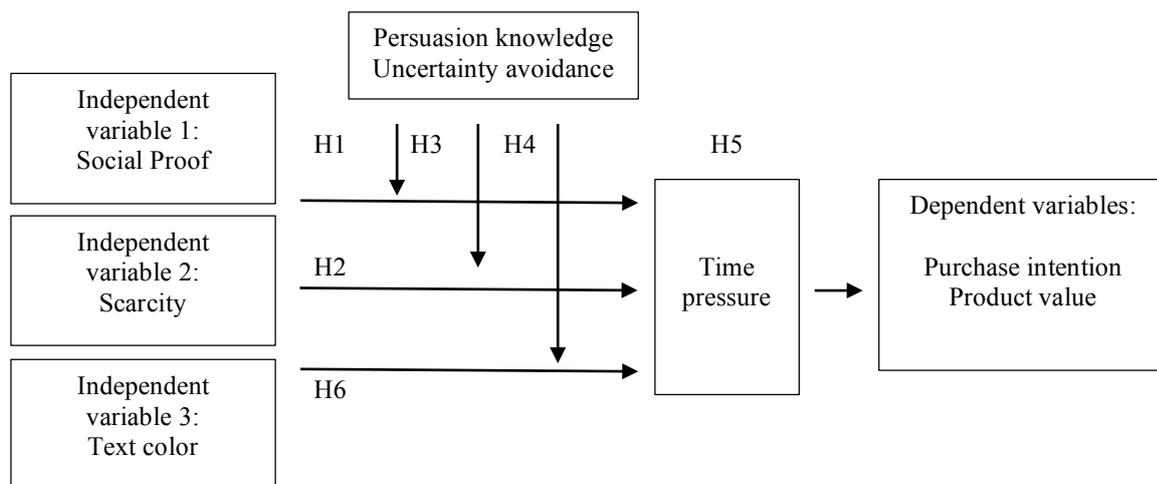
Figure 2.3 Research model.

3. Method

This is a 2 (social proof vs. no social proof message) x 2 (scarcity vs. no scarcity message) x 2 (orange vs. green text) between subject experimental research design. The different research conditions are shown in table 3.1. However, before the final research design and method was proposed, a pre-study with a visibility test was conducted to examine to what extend respondents noticed the manipulation messages. After the visibility test, different elements and conditions were changed for the main study. The analyses and results of this test are discussed in paragraph 3.1.

		Color: orange		Color: green	
		Scarcity		**Scarcity**	
		Yes	No	Yes	No
Social proof:	Yes	Condition 1	Condition 2	Condition 5	Condition 7
	No	Condition 3	Condition 4	Condition 6	Condition 8

Table 3.1. Research conditions experiment 2x2x2 design.

3.1. Pre-study

3.1.1. Visibility test

A 2 (social proof vs. no social proof message) x 2 (scarcity vs. no scarcity message) experimental research design was used for the visibility test. The goal of the visibility check was to examine to what extend respondents noticed the manipulation messages. The stimulus material of the visibility test is presented in Appendix A. Per condition, two manipulation messages were used during this test:

- **Social proof:** 'Popular: booked 39 tickets today' and '8 people are looking at this page'
- **Scarcity:** 'Only 8 tickets left' and 'Only a few tickets left'

The online survey tool Qualtrics was used to create the questionnaire and to collect data for the visibility check. The Dutch language was used for the development of the questionnaire because most of the respondents of the main study were Dutch. Family, friends, and colleagues, in the network of the author of this study, were asked to fill out the questionnaire. The first part of the visibility test (Appendix B) consisted of an introduction page. Respondents were instructed to use a laptop or computer to access the questionnaire, because the visibility of the stimulus material was not clear enough on a mobile phone. After the introduction page, respondents needed to read a scenario before they were assigned to the stimulus material. In this scenario, respondents were instructed

to imagine themselves into a situation in which they are interested to attend a German opera performance on the 21st of January 2017 in Amsterdam, and to take a close look at the ticketing website on the next page.

Next, respondents were randomly assigned to one of the four conditions of the visibility test. After reviewing one of the four screenshots of the ticketing website of Dutch National Opera, respondents were asked to select the manipulation messages they just saw. Respondents had the possibility to select several items. The following items were included in this question: Only 8 tickets left, A few tickets left, 8 people are looking at this moment at this page, Popular: booked 39 times today, Tickets available, and None of the above. This was the visibility check of the pre-study. The results are discussed in paragraph 3.1.2. After this question, respondents were asked for their demographic data, such as gender, age, and highest level of education.

3.1.2. Results visibility test

The data were collected between the 19th of October till the 22nd of October 2016. In total, a sample of n = 37 started with the visibility test questionnaire. Nevertheless, incomplete questionnaires had to be deleted (n = 10). It could be the case that some respondents opened the questionnaire on their mobile phone, and could not complete the questionnaire. Thus, in total, a sample of n = 27 respondents filled out the whole visibility test. There is almost an equal balance between males (48.1%) and females (51.9%) in the visibility test. The age of the participants ranged from 17 to 62 years, with an average age of M = 31.41 (SD = 14.04). In terms of education, most of the respondents (85.2%) were highly educated (HBO, WO, Postdoctoral).

The Pearson's chi-square test with α = .05 was used to evaluate whether there is a difference between the distribution of selected persuasion messages and the research conditions. In other words, whether showing the persuasion messages resulted in noticing the messages or not among the respondents. The tables and charts of the results of the visibility check are presented in Appendix C.

3.1.3. Chi-square test social proof

The chi-square test was statistically significant X^2 (1) = 23.281, $p < .001$ for 'popular: booked 39 times today' and social proof. Thus, the frequency of the 'popular: booked 39 times today' message was higher in the social proof condition as compared to the non-social proof condition.

The chi-square test was statistically significant for '8 people are looking at this page' message and social proof (Fisher-exact $p < .05$). The assumption (expected count 5 or more) of the chi-square test was not met, therefore the Fisher-exact test is used. The frequency of '8 people are looking at this page' message was higher

in the social proof condition as compared to the non-social proof condition. However, 'popular: booked 39 times today' was more successful than '8 people are looking at this page', which was only noticed by half of the respondents. Therefore, the 'popular: booked 39 tickets today' message was used for the main study.

3.1.4. Chi-square test scarcity

The Fisher-exact test was statistically significant for the distribution of 'only 8 tickets left' and scarcity (Fisher-exact $p < .01$). The assumption (expected count 5 or more) of the chi-square test was not met, therefore the Fisher-exact test is used. The frequency of this message was higher in the scarcity condition as compared to the non-scarcity condition.

The Fisher-exact test was statistically non-significant for the distribution of 'a few tickets left' and scarcity (Fisher-exact $p > .05$). Thus, there was no significant difference in the frequency of this message between the scarcity and non-scarcity condition. Obviously, 'only 8 tickets left' was more successful than 'a few tickets left'. Therefore, the 'only 8 tickets left' message was used for the scarcity condition in the main study.

3.1.5. Conclusion and implications visibility test

Based on the results of the visibility test can be concluded that the 'Popular: booked 39 tickets today' and 'Only 8 tickets left' were the messages that were noticed by most of the respondents within the manipulation conditions. Therefore, those two messages were selected for the main study. Nevertheless, different limitations were taken into account concerning this visibility test to draw lessons for the main study. First, the text color of the 'Popular: booked 39 tickets today' and 'Only 8 tickets left' messages in the visibility test was orange, while the other manipulation messages were visible in a white or transparent color (See Appendix A for the stimulus material). This could be the reason why these messages were selected by most of the respondents, because orange is a color that attracts attention. Furthermore, the 'Tickets available' message was green in the control condition while in the scarcity condition, this message was changed into orange (message of 'only 8 tickets left'). For the main study, the variable text color was included to test whether there was a difference of the effect of the social proof and scarcity message (presented in orange or green) on the dependent variables of this study.

Another limitation of the visibility test was that it was not clear whether the manipulation messages were effective or not. Items such as 'if I wait a day longer, the tickets for this opera performance are maybe sold out', 'tickets for this opera performance are selling out soon' or 'many people are interested in this opera performance'

should have been used for the visibility test. Hence, items to measure the effectiveness of the social proof and scarcity manipulations were included in the questionnaire for the main study.

Last, the visibility test was not conducted among respondents who are interested in opera, but among respondents in the network of the author of this study. Although the results of this test gives us a good impression of whether people noticed the persuasive messages or not, it would have been better if the visibility test was conducted among the main target group. Nevertheless, this was not possible.

3.2. Main study

3.2.1. Participants

In total, a sample of n = 424 Dutch respondents participated in this study. Nevertheless, incomplete questionnaires had to be deleted (n = 156). After removing the incomplete questionnaires, the sample used for analysis in this research consisted of n = 268 respondents who filled out the entire questionnaire. The majority of the respondents were male (male: 60,4%, female 39.6%). The age ranged from 18 to 87 years, with an average age of M = 56.4 (SD = 16.3). The level of education of the respondents was VMBO/MAVO (1.1%), HAVO (0.7%), VWO (2.2%), MBO (2.6%), University of applied sciences (29.5%), University (52.2%), and Postdoctoral (11.6%). See table 3.2 for an extended overview of the demographic characteristics of the respondents.

A Pearson's chi-square test (α = .05) was performed to determine whether there is a difference in gender distribution between the eight conditions. The chi-square test was statistically non-significant X^2 (7) = 11.682, p > .05. Thus, there was no significant difference in gender distribution between the eight conditions. To investigate the differences in age between the eight conditions, a one-way analysis of variances (ANOVA) between age and the research conditions was performed. The one-way ANOVA was statically non-significant, in other words, there was no significant difference in age distribution between the eight conditions F (7) = 1.256, p > .05.

Most of the respondents (94,8%) buys at least once a year online tickets for an opera performance. Furthermore, 5.2% of the respondents buys less than once a year, 34.4% buys 1 – 2 times a year, 38.8% 2 – 4 times a year, and 21.6% buys more than 5 times a year tickets for an opera performance. A one-way analysis of variances (ANOVA) between online buying behavior and the research conditions was performed. The one-way ANOVA was statically non-significant, meaning that there was no significant difference in online buying behavior of tickets between the eight research conditions F (7) = 1.521, p > .05.

Table 3.2. Demographic characteristics.

Conditions	Participants N	Gender Male %	Female %	Age Mean (SD)	Education Low %	High %
Orange color						
(1) SP yes x SCAR yes	33	66.7%	33.3%	59.2 (14.2)	0.0%	100.0%
(2) SP yes x SCAR no	34	70.6%	29.4%	56.6 (14.9)	5.8%	94.1%
(3) SP no x SCAR yes	34	55.9%	44.1%	49.6 (18.5)	8.8%	91.2%
(4) SP no x SCAR no	33	69.7%	30.3%	57.5 (16.3)	6.0%	94.0%
Green color						
(5) SP yes x SCAR yes	33	36.4%	63.6	55.3 (17.3)	0.0%	100.0%
(6) SP yes x SCAR no	34	58.8%	41.2%	55.9 (15.7)	2.9%	97.1%
(7) SP no x SCAR yes	34	61.8%	38.2%	59.7 (15.1)	11.8%	88.3%
(8) SP no x SCAR no	33	63.6%	36.4%	57.5 (17.7)	18.2%	81.8%
Total	268	60.4%	39.6%	56.4 (16.3)	6.7%	93.3%

Note:

SP = Social proof, SCAR = Scarcity.

Education: Low = VMBO/MAVO, HAVO, VWO, MBO.

Education: High = University of applied sciences, University, Postdoctoral.

3.2.2. Procedure

The data were collected between the 27th of November 2016 till the 1st of December 2016. At 10.15 am, on the 27th of November 2016, an e-mail message was distributed among 2141 people of the database of Dutch National Opera (see Appendix D). The people who are included in this database have attended an opera performance in the past or are registered as newsletter subscribers. Within this e-mail message, respondents were asked to participate in this study. Several URL links guided the respondents to the online Dutch questionnaire. To encourage respondents to fill out the entire questionnaire, respondents had the chance to win 2x2 tickets for an opera performance.

The first part of the questionnaire (see Appendix E) consists of the introduction page. Respondents were given a brief introduction with regard to the topic of this research, the expected time for completing the questionnaire, and to thank the respondents for participating in this study. Moreover, the participation was completely voluntarily and respondents had the change to end the questionnaire at any moment and for any reason.

After the introduction respondents were randomly assigned to one of the eight conditions of this research. However, before participants were exposed to the different conditions, they first needed to read a short scenario

in order to give the participants a task. After reading the scenario, the respondents were exposed to a screenshot of the ticketing website of Dutch National Opera. The information of one of the manipulation conditions was presented on the screenshots. Afterwards, respondents needed to fill out the questionnaire about the factors of this study. At the end of the questionnaire respondents were asked to fill out demographic questions (e.g. gender, age, education). The last question measured the yearly online buying behavior for tickets for performances of Dutch National Opera.

3.2.3. Stimulus material

Dutch National Opera provided the author of this study with the stimulus material for the experiment. The social proof and scarcity messages were included in the screenshots of the new ticketing site of the institute. The following persuasive messages were used in the screenshots:

- **Social proof:** 'Popular: booked 39 times today' (positioned below the '+ heeft u een promotiecode?' message in the center of the website).
- **Scarcity:** 'Only 8 tickets left' (positioned in the top header of the website).

Figure 3.1 presents the stimulus material of condition 1 on full-page. The stimulus material of the other conditions of the experiment are presented in Appendix F.

Figure 3.1. Condition 1: orange stimulus material with social proof and scarcity message.

3.2.4. Measurements

Most of the items in the questionnaire were adopted from previous studies and all the constructs were measured on a 5-point Likert scale (1=strongly disagree to 5=strongly agree). The following constructs were measured in this study: product value (Dodds, Monroe, & Grewal, 1991), purchase intention (Lee & Lee, 2009), time pressure, manipulation check social proof and scarcity (Wu, et al., 2012), persuasion knowledge (Rozendaal, Buijzen, & Valkenburg, 2010), and uncertainty avoidance (Jung & Kellaris, 2004). Most of the items were borrowed but reviewed to fit in this study. For instance, originally, the second question of the construct product value is formulated as follows: "This product is a good value for the money". In the revised version, we added the word 'tickets' to this question resulting in the following item: "These tickets are a good value for the money". Table 3.3 presents an overview of the reliability analysis of the constructs. See Appendix E for a complete overview of all the constructs and items that were used in this study.

Product value. The first dependent variable of this study is product value. This construct was measured with a 5-point Likert scale (1=strongly disagree to 5=strongly agree) with four items ($\alpha = .85$), such as "The expected price for these tickets is acceptable" and "These tickets are considered to be a good buy.

Purchase intention. The second dependent variable, purchase intention, was measured with a 5-point Likert scale (1=strongly disagree to 5=strongly agree) with three items ($\alpha = .91$). This construct measures the likelihood that a respondent is going to purchase tickets. Items such as "I have the intention of buying these tickets" and "I think it is a good idea to buy these tickets" were used to measure this construct.

Time pressure. The construct time pressure was included as a mediator to examine if the effect of the persuasion messages on the dependent variables is mediated by time pressure. This construct was measured with a 5-point Likert scale (1=strongly disagree to 5=strongly agree) with three items ($\alpha = .90$), such as "If I want to visit this opera performance, I must quickly decide about the purchase" and "Tickets will be sold out for this opera performance if I decide to purchase the tickets tomorrow".

Manipulation check social proof. The construct manipulation check social proof was used to measure the effectiveness of the social proof message "Popular: booked 39 times today". This construct was measured with a

5-point Likert scale (1=strongly disagree to 5=strongly agree) with three items (α = .78), such as "Tickets for this opera performance are very popular" and "I think that many people are interested in these tickets".

Manipulation check scarcity. The construct manipulation check scarcity was used to measure the effectiveness of the scarcity message "Only 8 tickets left". This construct was measured with a 5-point Likert scale (1=strongly disagree to 5=strongly agree) with the following two items (α = .83): "I think the availability of tickets for this opera performance is limited" and "There are only a few tickets left for this opera performance".

Persuasion knowledge. The first moderating variable of this study is persuasion knowledge. This construct was measured with a 5-point Likert scale (1=strongly disagree to 5=strongly agree) with six items (α = .49). However, to demonstrate internal consistency, the alpha score for a scale should be at least 0.70 (Nunnally, 1978). Therefore, item 1 "The aim of this message is to give information about the tickets" and item 2 "The aim of this message is to inform people about the amount of available tickets" were deleted to increase the Cronbach's alpha to α = .80, resulting in four items for this construct, such as "The aim of this message is to influence your opinion" and "the aim of this message is to stimulate the sales of tickets".

Uncertainty avoidance. The second moderating variable, uncertainty avoidance, was measured with a 5-point Likert scale (1=strongly disagree to 5=strongly agree) with seven items (α = .80), such as "I prefer structured situations to unstructured situations" and I feel stressful when I cannot predict consequences".

Table 3.3. Reliability analysis.

	Cronbach's alpha (α)	Number of items	M	SD
Measurement Scales				
Product value	.85	4	2.86	0.71
Purchase intention	.91	3	3.02	0.90
Time pressure	.90	3	3.24	0.90
Manipulation check social proof	.78	3	3.45	0.64
Manipulation check scarcity	.83	2	3.28	0.83
Persuasion knowledge	.80	4*	3.58	0.78
Uncertainty avoidance	.80	7	2.92	0.63

two items deleted

Note: constructs were measured on a 5-point Likert-Scale (1 = totally disagree/5= totally agree)

4. Results

To check whether the manipulations of social proof and scarcity were successful, a manipulation check was performed before the main and interaction effect analysis. Thereafter, a 2x2x2 univariate analysis of variance (ANOVA) was performed with social proof (yes, no), scarcity (yes, no), and color (orange, green), as the independent variables and product value, purchase intention, and time pressure as the dependent variables. Persuasion knowledge and uncertainty avoidance were included as covariates. A median split for persuasion knowledge (MED = 3.75, SD = .78) and uncertainty avoidance (MED = 2.86, SD = .63) was performed to further investigate the interaction of the moderating variables with the main factors. After the median spit, an independent sample t-test was performed to test the mean differences between low vs. high persuasion knowledge and low vs. high uncertainty avoidance. The t-test showed that there is statistical evidence (t = -20.076, p < .001) that the mean of persuasion knowledge significantly differs between low (M = 3.12, SD = .60) vs. high persuasion knowledge (M = 4.30, SD = .36). Furthermore, there was also statistical evidence (t = -21.270, p < .001) that the mean of uncertainty avoidance significantly differs between low (M = 2.36, SD = .35) vs. high uncertainty avoidance (M = 3.35, SD = .42).

4.1. Manipulation check

To investigate the effectiveness of the social proof and scarcity manipulations in this study, a factorial between groups analysis of variance (ANOVA) was performed. The social proof and scarcity manipulation perception were compared between the social proof and scarcity conditions. The ANOVA revealed a marginally significant main effect for the perception of social proof F (1) = 3.635, p = .058. An independent sample t-test was performed to test the mean differences between social proof vs. no social proof. The results of this test revealed that there is marginally statistical evidence (t = 1.910, p = .057) that the mean of the manipulation check of social proof differs between social proof (M = 3.52, SD = .68) vs. no social proof (M = 3.37, SD = .59).

The ANOVA showed a significant main effect for the scarcity perception F (1) = 7.825, p < .01. An independent sample t-test was performed to test the mean differences between scarcity vs. no scarcity. The results of this test revealed that there is statistical evidence (t = 2.806, p < .01) that the mean of the manipulation check significantly differs between scarcity (M = 3.42, SD = .88) vs. no scarcity (M = 3.14, SD = .74). Based on the results of the manipulation check test can be concluded that the manipulation checks in the main study were successful, however the scarcity manipulation worked better than the social proof manipulation.

4.2. Time pressure

Scarcity had a significant main effect on time pressure $F (1) = 9.476$, $p < .01$. Respondents who were exposed to the scarcity condition had a significantly higher score on time pressure (M = 3.41, SD = .91) as compared to respondents who were not exposed to the scarcity condition (M = 3.06, SD = .86). There was no significant main effect of social proof on time pressure $F (1) = 1.360$, $p > .05$. There was also no significant main effect of color on time pressure $F (1) = .011$, $p > .05$. Table 4.1 presents the findings from the ANOVA analysis.

The ANOVA showed a marginally significant two-way interaction effect between color and scarcity on time pressure $F (1) = 3.842$, $p = .051$. Figure 4.1 presents the interaction effect chart between scarcity and color on time pressure. This chart shows that respondents in the scarcity condition with green color experienced a higher sense of time pressure (M = 3.49, SD = .89) as compared to respondents in the scarcity condition with orange color (3.33, SD = .93), while respondents in the control condition (without scarcity) with orange color (M = 3.18, SD = .81) experienced a higher sense of time pressure as compared to respondents with green color (M = 2.95, SD = .90).

Uncertainty avoidance showed a significant result as covariate $F (1) = 4.895$, $p < .05$. To check whether there are moderating effects, a univariate analysis of variance (ANOVA) was performed with uncertainty avoidance (low, high), social proof (yes, no), and scarcity (yes, no) as the independent variables and time pressure as the dependent variable. There was a marginally significant three-way interaction effect between uncertainty avoidance, social proof, and scarcity $F (1) = 3.288$, $p = .071$. Figure 4.2 presents the three-way interaction effect charts between uncertainty avoidance, social proof, and scarcity on time pressure. The first chart shows that respondents who scored low on uncertainty avoidance and who were exposed to the scarcity condition and the non-social proof condition experienced a higher sense of time pressure (M = 3.55, SD = 1.07) as compared to respondents who were not exposed to the scarcity and social proof condition (M = 2.81, SD = .79), while there was only a small difference in time pressure between respondents who were exposed to the scarcity and social proof condition (M = 3.18, SD = .94) as compared to respondents who were exposed to the non-scarcity and social proof condition (M = 3.09, SD = .91).

The second chart (Figure 4.2) presents the respondents who scored high on uncertainty avoidance. This chart shows that respondents who were exposed to the scarcity condition and the non-social proof condition experienced a higher sense of time pressure (M = 3.55, SD = .72) than respondents who were not exposed to the scarcity and social proof condition (M = 3.31, SD = .81). Respondents who were exposed to the scarcity and social

proof condition scored higher on time pressure (M = 3.36, SD = .97) as compared to respondents who were exposed to the non-scarcity and social proof condition (M = 2.97, SD = .87).

Persuasion knowledge showed a significant result as covariate F $(1) = 8.810$, $p < .01$. For the covariate persuasion knowledge, a univariate analysis of variance (ANOVA) was performed with persuasion knowledge (low, high), social proof (yes, no), and scarcity (yes, no) as the independent variables and time pressure as the dependent variable. No interaction effects were found. The ANOVA revealed that persuasion knowledge had a significant main effect on time pressure F (1) = 4.451, $p < .05$. Participants who scored high on persuasion knowledge had a significantly lower score on time pressure (M = 3.10, SD = .95) as compared to participants who scored low on persuasion knowledge (3.33, SD = .86).

Table 4.1. 2x2x2 ANOVA Time pressure.

Factor	df	F	P
Persuasion knowledge	1	8.810	.003*
Uncertainty avoidance	1	4.895	.028**
Color	1	.011	.918
Social proof	1	1.360	.245
Scarcity	1	9.476	.002*
Color*Social proof	1	.113	.738
Color*Scarcity	1	3.842	.051***
Social proof*Scarcity	1	.494	.483
Color*Social proof*Scarcity	1	.064	.800

*Dependent variable: Time pressure. Note * p < .01 ** p < .05 *** p < .06*
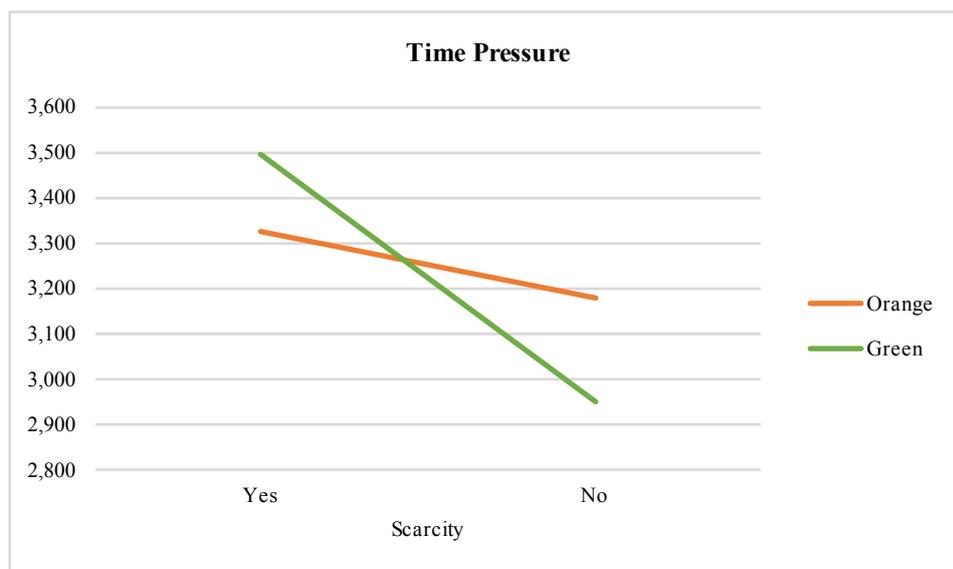
Figure 4.1. Interaction effect between color and scarcity on time pressure.
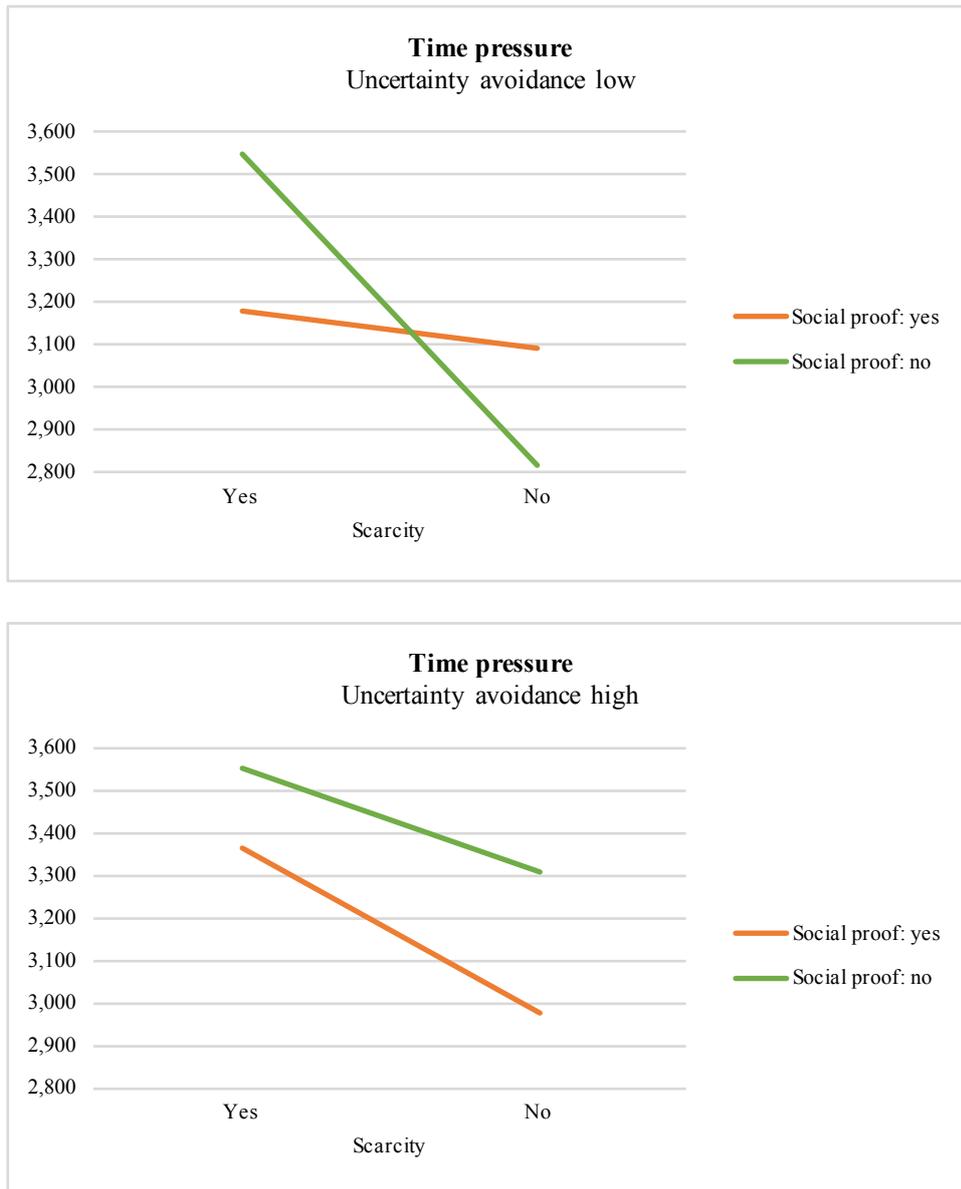
Figure 4.2. Interaction effect between uncertainty avoidance, social proof, and scarcity on time pressure.

4.3. Purchase intention

Scarcity had a significant main effect on purchase intention $F(1) = 4.855$, $p < .05$. Respondents who were exposed to the scarcity condition had a significantly lower score on purchase intention (M = 2.90, SD = .90) as compared to respondents who were not exposed to the scarcity condition (M = 3.14, SD = .88). The main effect of social proof on purchase intention was not significant $F(1) = .028$, $p > .05$. There was also no main effect of color on purchase intention $F(1) = .010$, $p > .05$. Table 4.2 presents the findings from the ANOVA analysis

There was a significant two-way interaction effect between color and social proof on purchase intention $F(1) = 4.085$, $p < .05$. Figure 4.3 presents interaction effect chart between color and social proof. This chart shows

that respondents in the social proof condition with orange color (M = 3.13, SD = .93) had a higher purchase intention as compared to respondents in the social proof condition with green color (2.92, SD = .94). But, respondents in the control condition (no social proof) with orange color (M = 2.92, SD = .79) had a lower purchase intention as compared to respondents in the control condition with green color (M = 3.12, SD = .92).

Table 4.2. 2x2x2 ANOVA Purchase intention.

Factor	df	F	P
Persuasion knowledge	1	2.534	.113
Uncertainty avoidance	1	.015	.903
Color	1	.010	.921
Social proof	1	.028	.867
Scarcity	1	4.855	.028*
Color*Social proof	1	4.085	.044*
Color*Scarcity	1	.419	.518
Social proof*Scarcity	1	.866	.353
Color*Social proof*Scarcity	1	.891	.346

*Dependent variable: Purchase intention. Note * p < .05*
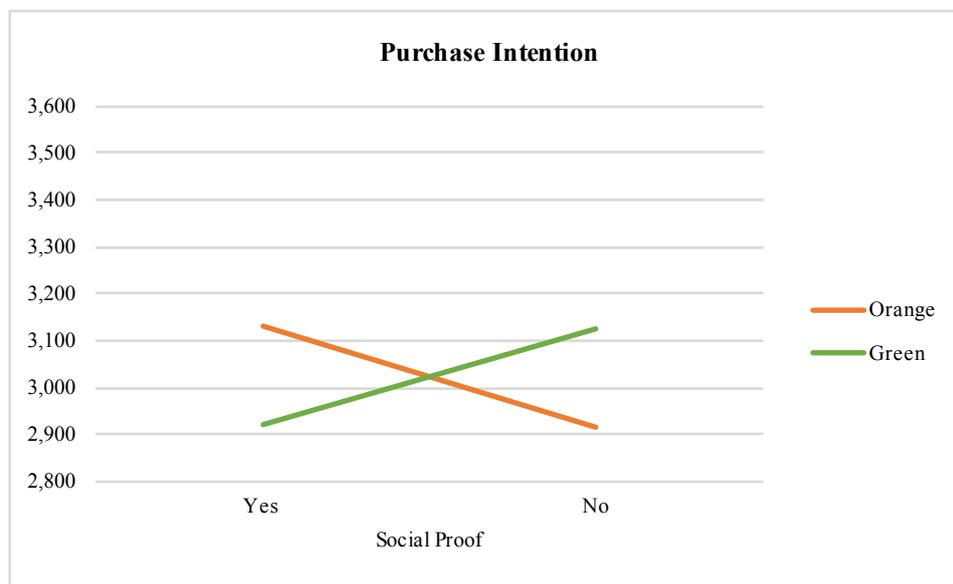
Figure 4.3. Interaction effect between color and social proof on purchase intention.

4.4. Product value

The main effect of social proof on product value was not significant $F_{(1)} = .485$, $p > .05$. There was also no main effect of scarcity on product value $F_{(1)} = 1.094$, $p > .05$. Moreover, no main effect was found for color on product

value $F (1) = .020, p > .05$. Table 4.3 presents the findings from the ANOVA analysis for product value. Persuasion knowledge showed a significant result as covariate $F (1) = 9.687, p < .01$. To check whether there are moderating effects a univariate analysis of variance (ANOVA) was performed with persuasion knowledge (low, high), social proof (yes, no), and scarcity (yes, no) as the independent variables and product value as the dependent variable. The additional analyses revealed no interaction effects. However, persuasion knowledge had a significant main effect on product value $F (1) = 5.615, p < .05$. Participants who scored high on persuasion knowledge had a significantly lower score on product value (M = 2.73, SD = .75) as compared to participants who scored low on persuasion knowledge (2.94, SD = .68).

Table 4.3. 2x2x2 ANOVA Product value.

Factor	df	F	P
Persuasion knowledge	1	9.687	.002*
Uncertainty avoidance	1	.188	.665
Color	1	.020	.886
Social proof	1	.485	.487
Scarcity	1	1.094	.297
Color*Social proof	1	.001	.976
Color*Scarcity	1	2.061	.152
Social proof*Scarcity	1	.179	.673
Color*Social proof*Scarcity	1	.212	.646

*Dependent variable: Product value. Note * p < .01*

4.5. Overview of tested hypotheses

The results of this study showed that social proof and scarcity had no significant main effect on product value. Therefore, H1 is not supported. Scarcity had a main effect on purchase intention. However, scarcity had a negative effect on purchase intention. In other words, presenting the scarcity message resulted in a lower purchase intention as compared to not presenting the scarcity message. No main effect was found for social proof on purchase intention. Thus, H2 is not supported. H3 is not supported, no moderating effect was found for persuasion knowledge. H4 is partially supported. The results of this study showed that a high level of uncertainty avoidance positively increased the effect of social proof and scarcity on time pressure as compared to a low level of uncertainty avoidance. H5a is partially supported: the results demonstrated that scarcity can increase time pressure. Additionally, the results showed that H6 is also partially supported, meaning that the orange-colored social proof message had a greater effect on purchase intention than the green-colored social proof message. Table 4.4 presents an overview of the tested hypotheses of this study.

Table 4.4. Overview of tested hypotheses.

	Hypotheses	Result
H1	Including the social proof message will increase the product value and purchase intention compared to the absence of the social proof message.	Not supported
H2	Including the scarcity message will increase the product value and purchase intention compared to the absence of the scarcity message.	Not supported
H3	A high level of persuasion knowledge will reduce the effect of social proof and scarcity on time pressure, product value, and purchase intention as compared to a low level of persuasion knowledge.	Not supported
H4	A high level of uncertainty avoidance will positively increase the effect of social proof and scarcity messages on time pressure, product value, and purchase intention as compared to a low level of uncertainty avoidance.	Partially supported*
H5a	Social proof and scarcity messages will increase time pressure.	Partially supported**
H5b	Time pressure will increase the product value and purchase intention.	Not supported
H6	Orange-colored social proof and scarcity messages will have a greater effect on time pressure, product value, and purchase intention as compared to the green-colored social proof and scarcity messages.	Partially supported***

* Supported: a high level of uncertainty avoidance will positively increase the effect of social proof and scarcity on time pressure as compared to a low level of uncertainty avoidance.

** Supported: scarcity message will increase time pressure.

*** Supported: orange-colored social proof message will have a greater effect on purchase intention as compared to the green-colored social proof message.

5. Discussion

The primary objective of this research was to investigate whether social proof and scarcity had an influence on consumer responses within the online ticketing store. The following research question was used during this study: *What are the effects of the social proof heuristic and scarcity heuristic on the customers' time pressure, product value, and purchase intention in an online e-commerce ticketing store?* In order to give an answer to this question, an online experiment was conducted among visitors of Dutch National Opera. This chapter provides a discussion of the results of this research. After this, the practical implications, limitations, and some suggestions for future research directions are discussed.

5.1. Main findings

Based on the literature review in the theoretical framework of chapter 2, positive main effects were expected from the independent variables social proof and scarcity on the dependent variables. Nevertheless, it was found that only scarcity had a significant positive effect on the dependent variable time pressure. Respondents were more time pressured in the scarcity condition than in the non-scarcity condition. This is in line with the theory, suggesting that scarcity messages can communicate to consumers that they need to buy a product as soon as possible otherwise they will not be able to purchase the product in the future (Wu, et al., 2012). Furthermore, a marginally significant interaction effect was found of scarcity and text color on time pressure. Respondents who were exposed to the green-colored scarcity message experienced a higher sense of time pressure as compared to the orange-colored scarcity condition. For the non-scarcity condition this effect was the other way around, meaning that the level of time pressure was higher in the orange-colored non-scarcity condition than the green-colored non-scarcity condition. The color red is associated with danger and excitement (Kardes, et al., 2011). This in combination with the scarcity message may have reduced the effect on time pressure as compared to a cooler color, such as green. Perhaps the respondents evaluated this scarcity message in combination with orange as a more manipulative message than the green-colored scarcity message. Which in turn reduced the level of time pressure.

Furthermore, scarcity showed a negative effect on purchase intention. Hence, presenting the scarcity message results in a lower purchase intention as compared to not presenting the scarcity message. This was not in line with the theory that stated that people prefer products or services that are difficult to obtain. A possible explanation for this effect might be the fact that the scarcity message communicates to respondents that many people already have bought the scarce tickets. As a result, "the appropriateness of the scarce product as status

symbol decreases" and that "a higher degree of uniqueness can no longer be achieved by purchasing this product" (Gierl, Plantsch, & Schweidler, 2008, p. 47). However, it could also be the case that the scarce tickets were not perceived as 'luxury' tickets because the scarcity message only stated that there were 8 tickets left for the 4th rang for the opera performance on the 21st of January, which was not the premiere performance. Perhaps respondents are used to buy tickets for the 'top' 1st or 2nd rang. In other words, maybe tickets for this date and the 4th rang are perceived as 'bad seats' with a limited view on the stage as compared to the 'royal' seats for the premiere performance that can be used as a status or luxury symbol. Another possible explanation for the negative effect of scarcity on the purchase intention might be the fact that the respondents were highly educated. For instance, 52.2% of the respondent had a university degree and 11.6% had a postdoctoral degree. Maybe the respondents are familiar with these kind of experimental studies and evaluated the scarcity message as a manipulation marketing 'trick' instead of a message that provides respondents with information about the opera performance. Furthermore, if customers think that a retailer is manipulating cues in the marketplace to have an influence on their buying choices, they may doubt the diagnosticity of those manipulating cues (Parker & Lehmann, 2011). This might explain the results of the negative purchase intention.

No significant effects of social proof on time pressure, product value, or purchase intention were found. One of the reasons that there is no main effect could be the fact that the manipulation perception of social proof was too weak. Hence, the social proof manipulation check showed a marginally significant effect for the perception of social proof. Nevertheless, a significant interaction effect of text color and social proof on purchase intention was found. The results confirmed that the orange-colored social proof message had a greater effect on purchase intention as compared to the green-colored social proof message. This is in line with the results of a study done by Jeong and Kwon (2012). They found that the purchase intention was higher among respondents who were exposed to an online popularity claim (attached to an USB stick) than among respondents who were not. Furthermore, the effect of the orange-colored social proof message was higher than the green-colored social proof message. This corresponds with the theory, suggesting that warm colors (e.g. red) have a more arousing effect on people than cool colors (e.g. green) (Kardes, et al., 2011; Kwallek, et al., 2007). In other words, the orange-colored social proof message grabbed more attention than the green-colored message, which in turn resulted in a higher purchase intention.

But why was not there a main effect of social proof on one of the dependent variables? The social proof principle implies that we tend to follow the opinions and behaviors of those who are similar or desirable to us (Amblee & Bui, 2011; Cialdini & Goldstein, 2002). Perhaps the respondents could not identify themselves with

the 'invisible' people that are represented in the used social proof text: 'Popular: booked 39 times today'. Another possible explanation of these findings could be the fact that a screenshot of the new website of Dutch National Opera is used during the experiment. This was the first time respondents saw the new website of Dutch National Opera. The new ticketing website probably claimed more attention than the social proof manipulation message. This could also be a reason for the weak manipulation perception of the social proof message.

Moderating effects were expected from the variables persuasion knowledge and uncertainty avoidance. A marginally significant three-way interaction effect of social proof and scarcity on time pressure was found for uncertainty avoidance. Respondents who were 'relaxed' (low uncertainty avoidance) and who were exposed to the scarcity and non-social proof condition were more time pressed than respondents who were not exposed to the scarcity or social proof conditions. This is a remarkable result, meaning that by showing the scarcity message, time pressure can be increased for people who score low on uncertainty avoidance. The differences for social proof on time pressure were minimal. Moreover, both the social proof and scarcity manipulation had an effect on time pressure for people who want to avoid uncertainty. This is in line with the theory suggesting that people with high levels of uncertainty avoidance rely more on decision heuristics to avoid uncertainty (Jung & Kellaris, 2004). No interaction effect was found for the moderator persuasion knowledge. However, persuasion knowledge had a main effect on time pressure and on product value, meaning that participants who scored high on persuasion knowledge had a lower score on time pressure and product value as compared to participants with a low level of persuasion knowledge.

5.2. Limitations and future research directions

There are different limitations that need to be taken into account concerning this study to draw lessons for future research. A scenario-based method with a screenshot of the website of Dutch National Opera was used. This method was appropriate to give first insights into the effectiveness of the social proof and scarcity manipulation techniques on time pressure, product value, and purchase intention of respondents. Nevertheless, the generalizability of this method is restricted because it does not represent the 'real situation'. In other words, it is not a real buying situation for respondents. Thus, it is not clear whether respondents would react similarly to these manipulation messages in an experimental setting as in real-life. Therefore, it would be interesting to implement these marketing techniques into real websites. An a/b-test could be used to randomly assign website visitors to different variants of the website. For instance, users who are assigned to group A are exposed to a persuasive message, while in variant B, the control condition, users are not exposed to the persuasive message. As a result, differences in purchases could be detected between the two groups.

The manipulations did not have an effect on the variable product value. Items, such as "The expected price for these tickets is acceptable" and "These tickets are considered to be a good buy" were used to measure the variable product value. In the main study, it was possible for respondents to move back to the stimulus material to review the price of the tickets for the performance. However, it could be the case that respondents did not see the price of the tickets and were not aware of the fact that they could move back to the stimulus material. In future research it would be better to ask the following question to measure the product value: "How much are you willing to pay for these tickets?".

A high amount of incomplete questionnaires (n = 156) had to be deleted. A reason therefore being could be the fact that respondents opened the questionnaire on their mobile phone. Respondents were instructed in the e-mail message and introduction of this study to use a laptop or computer to access the questionnaire, because the visibility of the stimulus material was not clear on a mobile phone. This could be the reason that there were many dropouts. In future research it is recommended to direct respondents, who are using a mobile phone, to the stimulus material of the mobile ticketing website. In this case, possible differences between the mobile and desktop website could be addressed.

There was no main effect of social proof. As already mentioned in the paragraph 5.1, maybe the respondents could not identify themselves with the 'invisible' people that booked tickets in the used social proof message: 'Popular: booked 39 times today'. Maybe the results would have been different if enclosed online reviews of other opera visitors had been used. According to Amblee and Bui (2011), "the shopper will seek reviews from friends as a source of emotional, possibly nonjudgmental guidance and support—a personal touch in the buying decision process" (p. 93). Although it was technically not possible to show reviews (e.g. Facebook reviews) of friends of the respondents in this study, reviews of similar aged and highly educated people (i.e. presented with a profile picture and personal information) who are providing in-depth information about the opera performance could be a better form of social proof to have an effect on the behavior of people. In addition, it would also be interesting to test the other principles of persuasion. For instance, an extension with an authority (e.g. journalist, scientist, psychologist) with an expert opinion about their field of profession, might also give interesting insights. Because people tend to be influenced by authorities (Cialdini, 2001).

Another topic for future research is related to the stimulus material. In the main study, the scarcity manipulation was positioned in the top header of the website and the social proof manipulation was positioned in the center of the website (see paragraph 3.2.3). This could be the reason why the manipulation perception scarcity was significant and manipulation perception social proof not (marginally). In other words, maybe the position of

the manipulation is an important factor to take into account, because it could be that a manipulation message positioned in the top header of a website attracts more attention (more persuasive) than positioned in the center.

The generalizability of the results of this study is restricted because this research is conducted among a specific target group of people who are interested in opera, highly educated, and senior aged. The results revealed that scarcity had a negative effect on purchase intention and can increase time pressure. Is this also the case if we repeat this study among other groups, products, or services? And which variables do we need to take into account for future research? Education might be an interesting variable, because most of the respondents of this study were highly educated. Therefore, it would be interesting, for instance, to extend this research topic to insurance companies, exclusive holiday agencies, and dating websites with a highly educated target group.

Furthermore, it is expected that this sample of respondents is high involved with Dutch National Opera because most of the respondents (94,8%) buys at least once a year tickets for an opera performance or are registered as newsletter subscribers. Maybe the level of involvement is also an important factor to take into account. Hence, in future research it would be interesting to test the social proof and scarcity manipulations among, for instance, two different groups: low vs. high education and low vs. high involvement. Different products or services could be used. For example, most of the time people are high involved when booking a holiday. Both low and highly educated people go on vacation. Furthermore, there are exclusive holiday agencies offering expensive holiday trips to the cultural capitals of the world and there are agencies offering low budget last-minute trips to all-inclusive hotels at sea. Of course people from both educational levels book trips for both types of holidays. But, it could be the case that more highly educated people book a trip for the exclusive holidays and more low educated people book a trip for the last-minute holidays, or the other way around. Maybe the results of future research will reveal that low educated people 'go with the flow' when booking a holiday and are more susceptible for online persuasive messages than highly educated people. Or maybe the level of education does not have an effect on the purchase intention. To find out, more research is needed in order to test the effectiveness of the social proof and scarcity principles on consumers' responses in different areas and for different groups, products, and services.

5.3. Practical implications

Practical implications for marketers, especially who are working in the culture industry, or who are working for companies (e.g. insurances companies, holiday agencies, dating websites) with a target group that is highly educated and high involved, can be drawn from the research findings of this study. This study revealed that

scarcity had a negative effect on purchase intention and can increase the level of time pressure. Manipulating people with the online principles of persuasion could backfire and should therefore be used with caution. A recommendation for marketers working for companies who are selling different products or services would be to conduct an a/b test to test the real effectiveness of scarcity and social proof on the purchase intention of their target group. Different types of scarcity and social proof techniques, such as Facebook reviews of friends, could be used and tested. Furthermore, other types of the principles of persuasion, such as authority, could also be used and tested.

5.4. Conclusion

Internet usage and online shopping have risen tremendously in recent years (Lissitsa & Kol, 2016). With the rapid growth of online shopping, different companies try to persuade consumers to buy their products or services. Despite the frequent online usage of the principles of persuasion by companies (e.g. Booking.com and EasyJet), little is known within the academic literature about the effectiveness of these persuasion principles on consumers' responses in the online ticketing context.

This is one of the first studies that measured the online effectiveness of social proof, scarcity, and text color on consumer responses within the online ticketing store in the culture and entertainment industry. This study shows that scarcity increased time pressure, but had a negative effect on purchase intention. Social proof was only effective in combination with the orange color to increase purchase intention. High uncertainty avoidance resulted in a higher level of time pressure after exposure to the social proof and scarcity message. For low uncertainty avoidance, only the scarcity message increased time pressure. However, it is worth to mention that a specific target group of senior aged and highly educated respondents, who are interested in opera, participated in this study.

To conclude, persuading people with the principles of persuasion should be used with caution, because it can backfire and can have a negative effect on the purchase intention. However, to check whether these results also apply for different companies who are offering products or services to consumers who are, for instance, low or high involved or low or highly educated, more research is needed to test the online effectiveness of the principles of persuasion on consumer behavior.

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Appendix

Appendix A Stimulus material visibility test

Condition 1: Stimulus material with social proof message.

Condition 2: Stimulus material with scarcity message.

Condition 3: Stimulus material with social proof and scarcity message.

Condition 4: Stimulus material without persuasion messages.

Appendix B Questionnaire visibility test

Beste deelnemer

Bedankt dat u wilt deelnemen aan deze korte enquête. Het doel van de vragenlijst is om de nieuwe ticketing website van de Nationale Opera & Ballet te beoordelen.

Gebruik een laptop/computer voor het invullen van de vragenlijst. Dit is omdat er een afbeelding wordt getoond. Het beantwoorden van deze vragen zal niet langer dan drie minuten duren.
De informatie wordt anoniem behandeld en alleen gebruikt voor dit onderzoek. U start de enquête door te klikken op de pijl aan de rechterkant van de pagina.

Met vriendelijke groet,

Teun Keizer
t.h.t.keizer@student.utwente.nl

___

__Lees de tekst hieronder nauwkeurig en stelt u zich het volgende voor:__

U bent zeer geïnteresseerd in Duitse Opera en u heeft besloten om op zaterdag **21 januari 2017** een voorstelling van de Nationale Opera in Amsterdam te bezoeken. Op de website kwam u tickets tegen van de voorstelling 'Die Entführung aus Dem Serail' op zaterdag 21 januari 2017. Op de **volgende pagina** kunt u de informatie over de tickets bekijken waarin u bent geïnteresseerd.

Bekijk de ticketing informatie over de voorstelling op de website van de Nationale Opera **aandachtig**. Als u alle informatie voldoende hebt opgenomen, klik dan op de pijl rechtsonder om de enquête af te ronden.

___

__Random stimulus condition 1 – 4__

___

Visibility check

Welke informatie heeft u opgemerkt op de websitepagina die u zojuist heeft bekeken? Er zijn meerdere antwoorden mogelijk.

- o   Nog 8 kaarten beschikbaar.
- o   Enkele kaarten beschikbaar.
- o   Er kijken momenteel 8 bezoekers naar deze pagina.
- o   Populair: vandaag 39 kaarten besteld.

- Kaarten beschikbaar.
- Geen van bovenstaande.

Demographics

Wat is uw geslacht?
- Man
- Vrouw

Wat is uw leeftijd?

Wat is uw hoogst genoten opleiding?
- Basisonderwijs / lagere school
- Middelbare school
- MBO
- HBO
- WO
- Post doctoraal

Bedankt voor uw tijd om aan deze enquête deel te nemen. Uw antwoord is geregistreerd.

Appendix C Results visibility test

Table 1. Demographics

		Social proof: yes Scarcity: no	Social proof: no Scarcity: yes	Social proof: yes Scarcity: yes	Social proof: no Scarcity: no
Count		6	8	8	5
Gender	Male	33.3%	62.5%	37.5%	48.1%
	Female	66.7%	37.6%	62.5%	51.9%
Age	Mean	35.17	33.12	32.87	21.80
	SD	16.59	14.91	14.98	2.68
Education	Primary education	0.0%	0.0%	0.0%	0.0%
	High school	0.0%	0.0%	0.0%	40.0%
	Mbo	16.7%	0.0%	12.5%	0.0%
	Hbo	16.7%	62.5%	37.5%	40.0%
	Wo	50.0%	37.5%	50.0%	20.0%
	Postdoctoral	16.7%	0.0%	0.0%	0.0%

Table 2. Sample characteristics popular: booked 39 times today

		Social proof: yes	Social proof: no	Total
Popular: booked 39 tickets today:	yes	13	0	13
	% within social proof	92.9%	0.0%	48.1%
	no	1	13	14
	% within social proof	7.1%	100.0%	51.9%
	Total	14	13	27
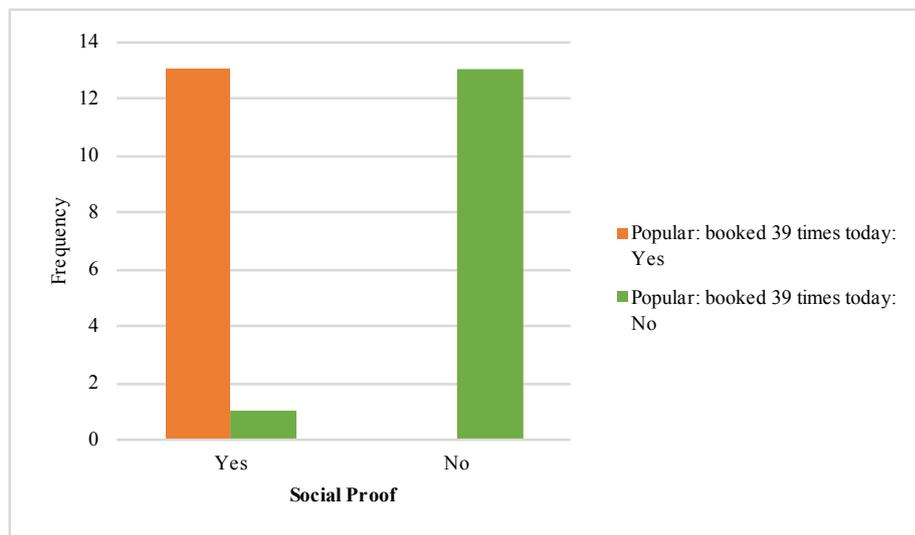
Figure 1.1. Popular: booked 39 tickets today.

Table 3. sample characteristics 8 people are looking at this page.

		Social proof: yes	Social proof: no	Total
8 people are looking at this page:	yes	7	1	8
	% within social proof	50.0%	7.7%	48.1%
	no	7	12	19
	% within social proof	50.0%	92.3%	51.9%
	Total	14	13	27
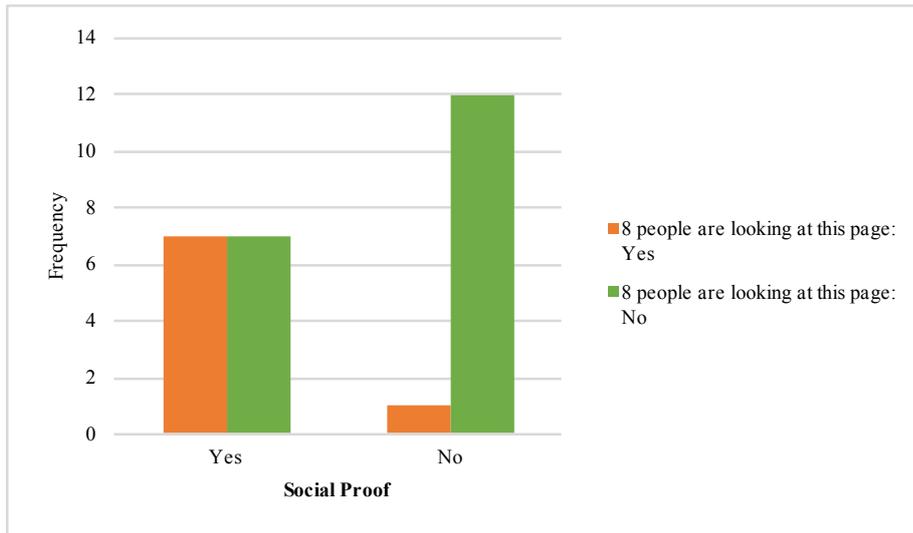
Figure 1.2. 8 people are looking at this page.

Table 4. Sample characteristics only 8 tickets left.

		Scarcity: yes	Scarcity: no	Total
Only 8 tickets left:	yes	10	1	11
	% within scarcity	62.5%	9.1%	40.7%
	no	6	10	16
	% within scarcity	37.5%	90.9%	59.3%
	Total	16	11	27
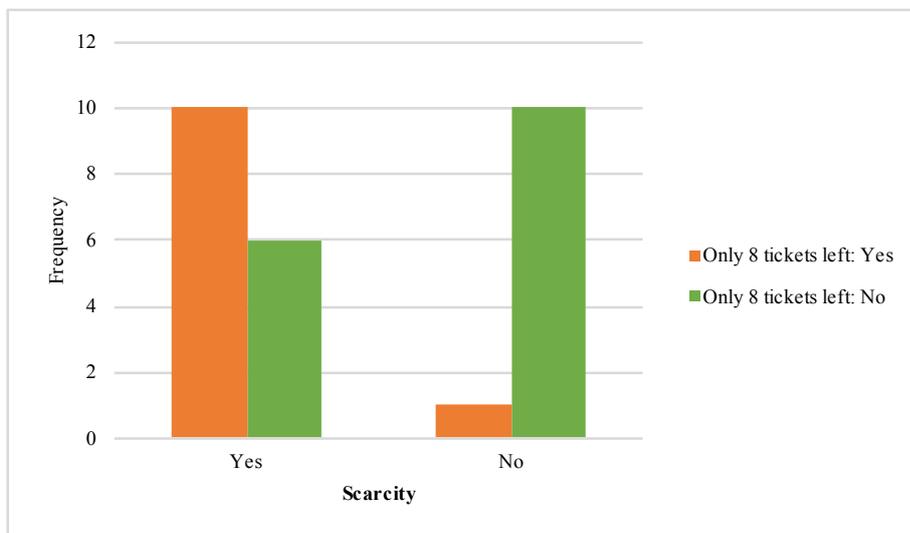
Figure 1.3. Only 8 tickets left.

Table 5. sample characteristics only 8 tickets left.

		Scarcity: yes	Scarcity: no	Total
A few tickets left:	yes	4	0	4
	% within scarcity	25.0%	0.0%	14.8%
	no	12	11	23
	% within scarcity	75.0%	100.0%	85.2%
	Total	16	11	27
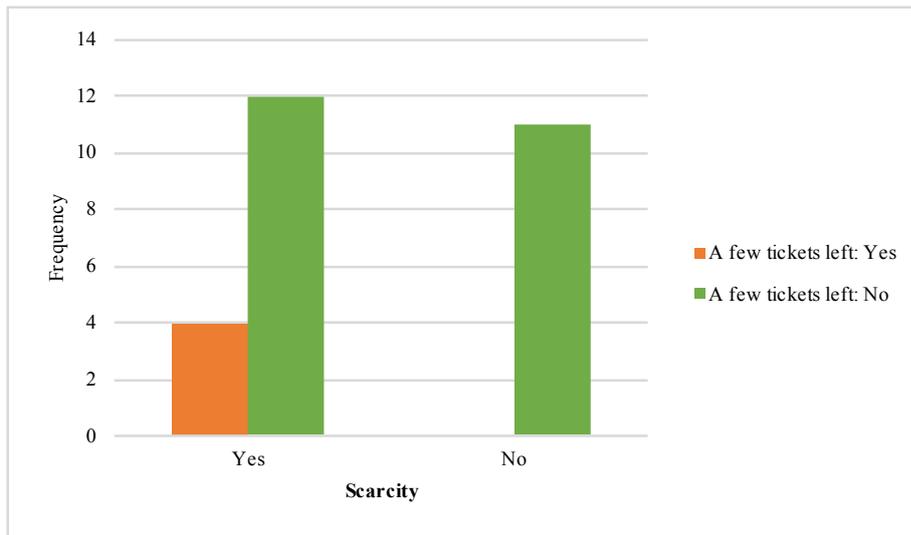
Figure 1.4. A few tickets left.

Appendix D Invitation e-mail questionnaire

NATIONALE
OPERA &
BALLET

PROGRAMMA	PLAN UW BEZOEK	STEUN ONS

UITNODIGING
ONDERZOEK
—
vernieuwde online
kaartverkoopsite

START ENQUETE

Geachte heer Keizer,

Om u de beste service te kunnen bieden is Nationale Opera & Ballet constant bezig om de gebruikerservaring en informatievoorziening van de website te verbeteren. De mening van onze bezoekers vinden wij zeer belangrijk. In samenwerking met een master student van de Universiteit Twente hebben wij een onderzoek opgesteld. Wij zouden het op prijs stellen als u hieraan deel wilt nemen. Het is immers úw ervaring met onze website die telt.

In dit onderzoek krijgt u een screenshot (schermafbeelding) van de vernieuwde kaartverkoopsite te zien, aan de hand van enkele vragen kunt u deze beoordelen.

Het beantwoorden van deze vragen zal ongeveer vijf minuten duren. De gegevens worden uiteraard volledig anoniem verwerkt. Onder alle deelnemers verloten wij 2x2 kaarten voor een voorstelling naar keuze.

Gebruik een laptop/computer voor het invullen van de vragenlijst.

START ENQUETE   **KLIK HIER**

Alvast hartelijk dank voor uw deelname aan dit onderzoek!

Met vriendelijke groet,

Nationale Opera & Ballet

NATIONALE OPERA & BALLET

U ontvangt deze mail omdat u in het verleden kaarten heeft gekocht. Uitschrijven kan hier | Profiel wijzigen

Appendix E Questionnaire main study

Beste deelnemer,

We stellen het zeer op prijs dat u deel wilt nemen aan deze enquête.

Het doel van dit onderzoek is om de nieuwe kaartverkoopsite van Nationale Opera & Ballet te beoordelen. Het onderzoek werkt als volgt: u krijgt straks een kort scenario voorgelegd van een bepaalde situatie. Bestudeer het scenario aandachtig en lees alle informatie zorgvuldig door. Daarna worden hier vragen over gesteld.

Gebruik een laptop/computer voor het invullen van de vragenlijst. De reden hiervoor is dat er een screenshot (schermafbeelding) wordt getoond.

In deze vragenlijst wordt voornamelijk naar uw mening gevraagd, er zijn geen goede of foute antwoorden. Het beantwoorden van deze vragen zal ongeveer 5 minuten duren. De gegevens worden uiteraard volledig anoniem verwerkt. U hebt altijd de mogelijkheid om tussentijds uw deelname te onderbreken.

Onder alle deelnemers verloten wij 2x2 kaarten voor een voorstelling naar keuze. Als u kans wilt maken op deze kaarten, vul dan aan het eind van de enquête uw e-mailadres in.

Klik op de >>> VOLGENDE PAGINA >>> knop om te beginnen.

Alvast hartelijk dank voor uw deelname aan dit onderzoek.

Nationale Opera & Ballet
mailing@operaballet.nl

Lees de tekst hieronder nauwkeurig en stelt u zich het volgende voor:

U bent zeer geïnteresseerd in opera's van Mozart en u heeft besloten om op zaterdag 21 januari 2017 een voorstelling van de Nationale Opera te bezoeken. Op de volgende pagina ziet u een screenshot (schermafbeelding) van de website van de Nationale Opera waarop u 2 tickets tegenkomt van de voorstelling 'Die Entführung aus dem Serail' waarin u bent geïnteresseerd.

Bekijk de **<u>screenshot</u>** van de website over de voorstelling op de **volgende pagina** aandachtig.

Als u alle informatie voldoende hebt opgenomen, **scroll dan naar beneden en klik** op de >>> VOLGENDE PAGINA >>> knop **rechtsonder** om verder te gaan met de enquête.

De volgende vragen gaan over de tickets die u zojuist zag.

Product value

(5-punts schaal "zeer mee oneens" tot "zeer mee eens")

Geef achter elke uitspraak aan in welke mate u het daarmee eens of oneens bent:

Deze tickets hebben een goede prijs/kwaliteit verhouding.

De getoonde prijs voor deze tickets is acceptabel.

Deze tickets kunnen worden beschouwd als een goede aankoop.

Deze tickets kunnen worden beschouwd als een koopje.

Purchase intention

(5-punts schaal "zeer mee oneens" tot "zeer mee eens")

Geef achter elke uitspraak aan in welke mate u het daarmee eens of oneens bent:

Ik sta positief tegenover de aankoop van deze tickets.

Ik overweeg om deze tickets te kopen.

Ik denk dat het een goed idee is om deze tickets te kopen.

Time Pressure

(5-punts schaal "zeer mee oneens" tot "zeer mee eens")

Geef achter elke uitspraak aan in welke mate u het daarmee eens of oneens bent:

Als ik deze voorstelling wil bijwonen moet ik snel beslissen over de aankoop van de tickets.

Als ik een dag langer wacht zijn de tickets uitverkocht.

Als ik deze voorstelling wil bijwonen heb ik weinig tijd meer om te beslissen voordat alle tickets zijn verkocht.

Hier volgen nog een aantal vragen over de tickets die u zojuist zag.

Manipulation check social proof

(5-punts schaal "zeer mee oneens" tot "zeer mee eens")

Geef achter elke uitspraak aan in welke mate u het daarmee eens of oneens bent:

Er zijn veel mensen geïnteresseerd in deze tickets.

Tickets voor deze voorstelling zijn populair.

Er zijn vandaag al veel tickets verkocht van deze voorstelling.

Manipulation check scarcity

(5-punts schaal "zeer mee oneens" tot "zeer mee eens")

De tickets voor deze voorstelling zijn snel uitverkocht.

Er zijn nog maar weinig tickets beschikbaar voor deze voorstelling.

Hier volgen nog een aantal vragen over de kaartverkoopinformatie.

Persuasion Knowledge

(5-punts schaal "zeer mee oneens" tot "zeer mee eens")

Stelt u zich voor dat het volgende bericht wordt vermeld op de website van Nationale Opera & Ballet:

Nog 12 kaarten te koop

Geef achter elke uitspraak aan in welke mate u het daarmee eens of oneens bent:

Het doel van dit bericht is om mensen te informeren over de tickets.

Het doel van dit bericht is om mensen te informeren over de hoeveelheid beschikbare tickets.

Het doel van dit bericht is om mijn mening te beïnvloeden.

Het doel van dit bericht is om de verkoop van tickets te stimuleren.

Het doel van dit bericht is om tickets te verkopen.

Het doel van dit bericht is om mensen te interesseren voor de tickets.

De volgende vragen gaan over uzelf.

Uncertainty avoidance

(5-punts schaal "zeer mee oneens" tot "zeer mee eens")

Geef achter elke uitspraak aan in welke mate u het daarmee eens of oneens bent:

Ik prefereer gestructureerde situaties boven ongestructureerde situaties.

Ik prefereer specifieke instructies boven globale richtlijnen.

Ik heb de neiging om angstig te worden als ik niet weet wat de uitkomst zal zijn.

Ik voel mij gestrest als ik ergens de consequenties niet van kan overzien.

Ik zou geen risico´s nemen als de/een uitkomst niet voorspeld kan worden.

Ik ben van mening dat regels niet gewijzigd moeten worden vanwege louter praktische redenen.

Ik houd niet van ongestructureerde situaties.

Hier volgen nog enkele demografische vragen.

Wat is uw geslacht?

- o   Man
- o   Vrouw

Wat is uw leeftijd?

…

Wat is uw hoogst genoten of huidige opleiding?

- o   Basisonderwijs, lagere school
- o   Vmbo, mavo
- o   Havo
- o   Vwo
- o   Middelbaar beroepsonderwijs
- o   Hoger beroepsonderwijs
- o   Wetenschappelijk onderwijs
- o   Postdoctoraal

Hoe vaak koopt u tickets voor Nationale Opera & Ballet via het internet?

- o   Minder dan 1 keer per jaar.
- o   1 – 2 keer per jaar.
- o   2 – 4 keer per jaar.
- o   Vaker dan 5 keer per jaar.

Onder alle deelnemers verloten wij 2x2 kaarten voor een voorstelling naar keuze. Indien u hier kans op wilt maken, vul dan hieronder uw e-mailadres in:

……………………

Klik op de >>> VOLGENDE PAGINA >>> knop om de enquête af te ronden.

Bedankt voor uw tijd om aan deze enquête deel te nemen. Uw antwoord is geregistreerd.

Appendix F Stimulus material main study

Condition 1: Stimulus material with social proof and scarcity message (orange text color). *Condition 2: Stimulus material with social proof message (orange text color).*
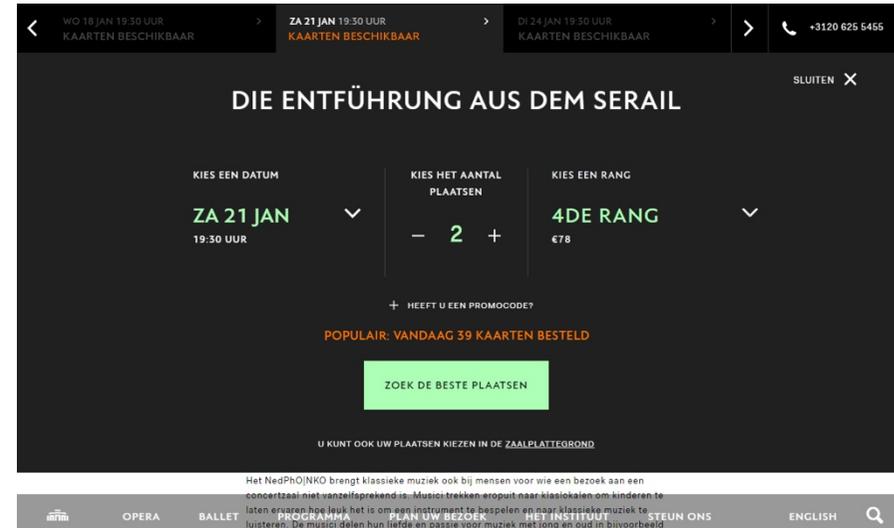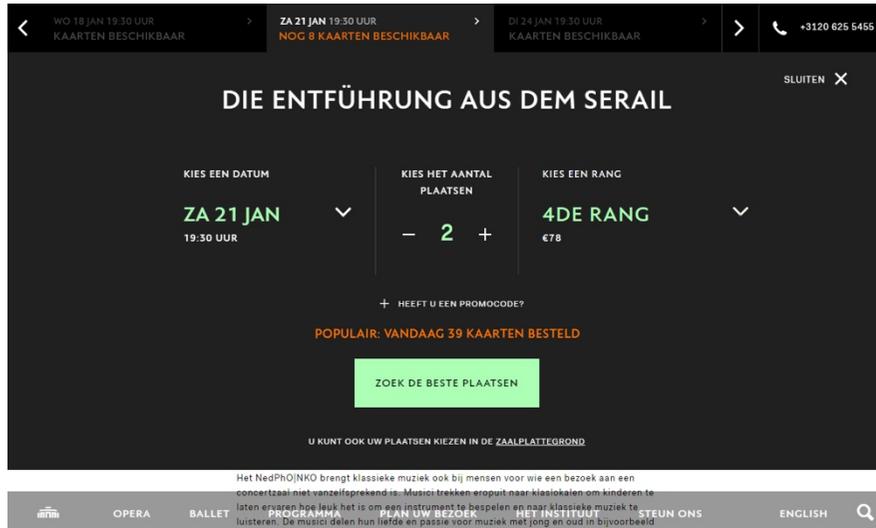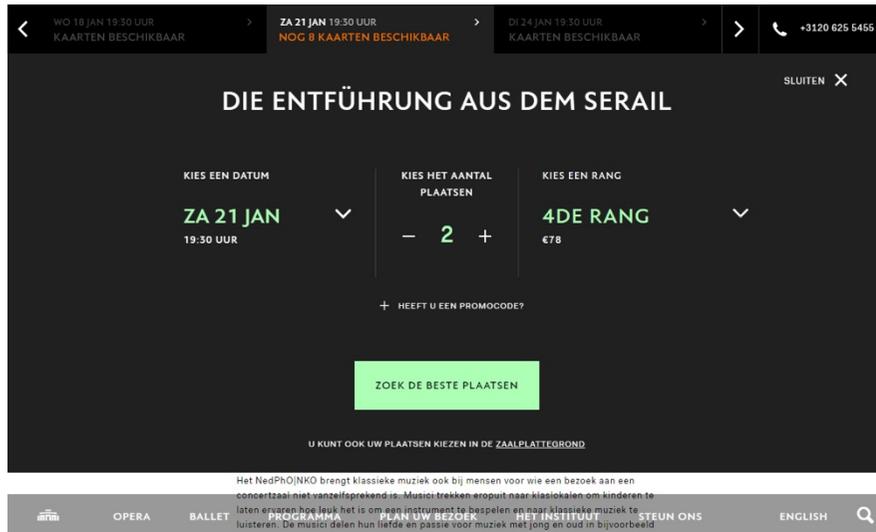
Condition 3: Stimulus material with scarcity message (orange text color). *Condition 4: Stimulus material without persuasion messages (orange text color).*
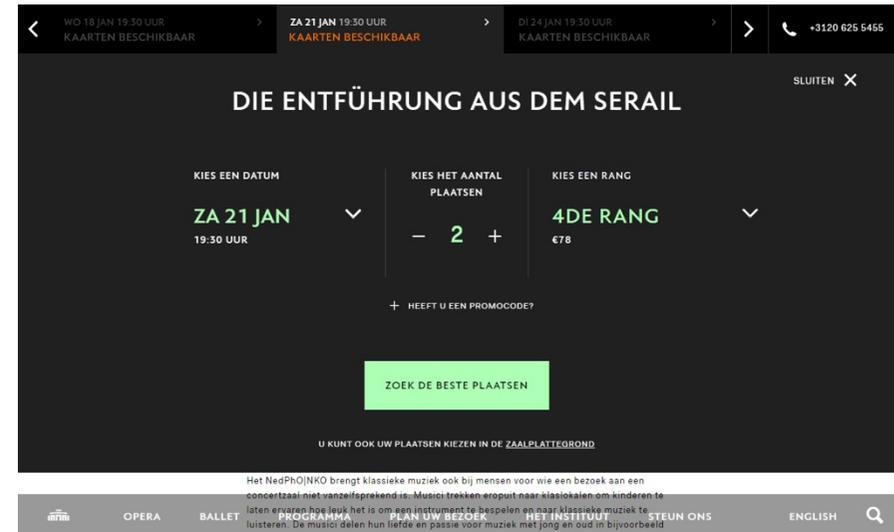
Condition 5: Stimulus material with social proof and scarcity message (green text color).
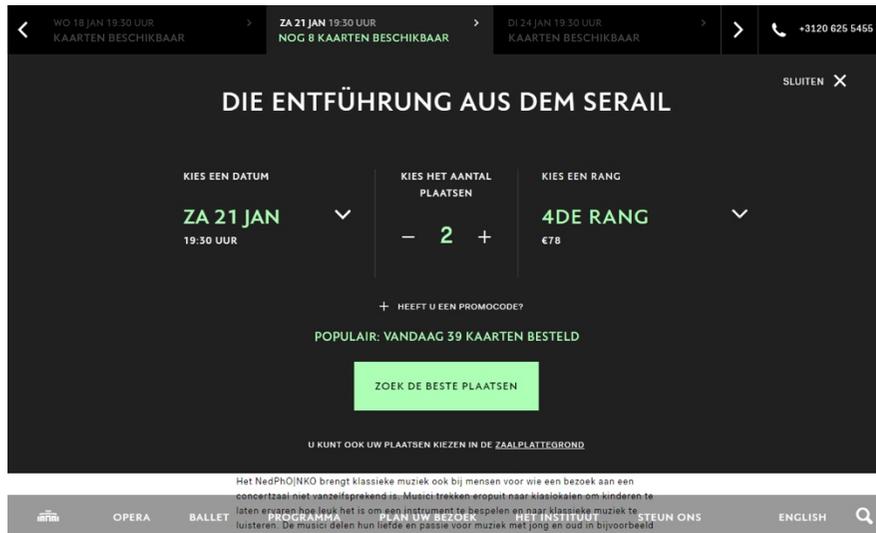
Condition 6: Stimulus material with social proof message (green text color).
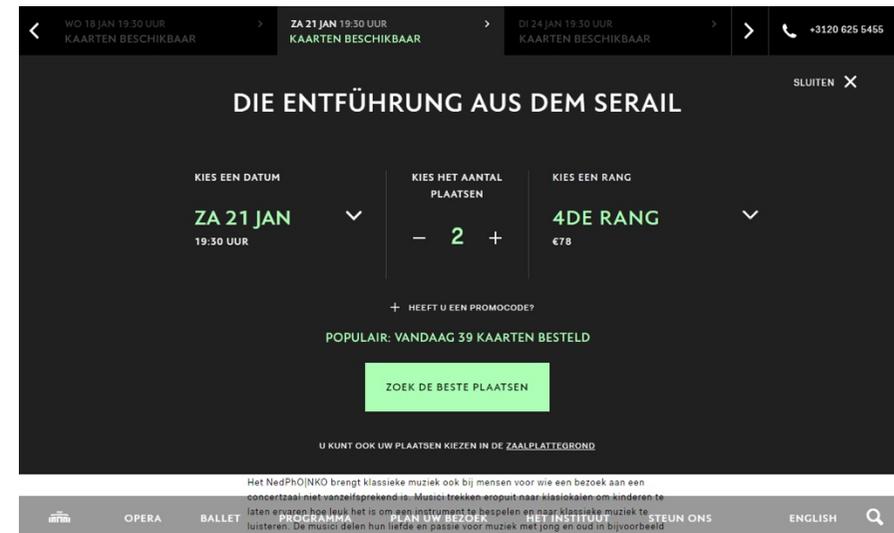
Condition 7: Stimulus material with scarcity message (green text color).
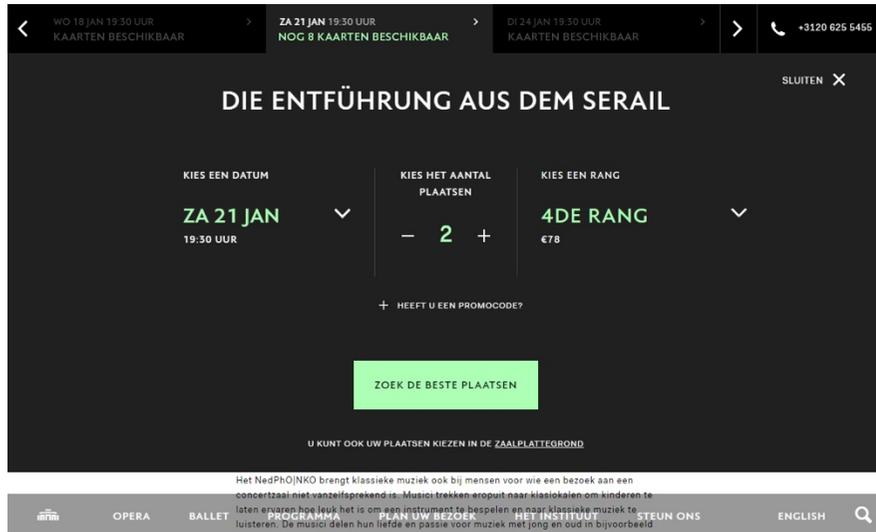
Condition 8: Stimulus material without persuasion messages. (green text color).