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DO SOCIAL PROOF AND SCARCITY WORK IN THE ONLINE CONTEXT?

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ABSTRACT

Persuasion principles, including social proof and scarcity (Cialdini, 2001), are frequently used online, but little is known about their effectiveness in this context. This study aimed at investigating whether social proof and scarcity heuristics influenced consumer responses towards the online ticketing store of Dutch National Opera. Participants (N=268, recruited among previous opera visitors) were shown the ticketing website that varied in the presence of scarcity and social proof messages. We found a positive effect of scarcity on time pressure, but a negative effect on purchase intention. Our results suggest that using persuasion principles for certain consumer groups can backfire.

INTRODUCTION

In recent years, online shopping has increased dramatically. In 2015, more than 70% of the Dutch population bought a product or service online (CBS, 2016). Every website is trying to persuade its visitors of something (Horvath, 2011): to download an information file, to sign up for a newsletter, or to buy a product. Cialdini (2001) identified six universal principles of persuasion, namely: commitment and consistency, reciprocation, social proof, authority, liking, and scarcity. Some of these principles are often used online. For instance, the scarcity message presented on the website of *EasyJet* (*'Hurry! Only a few seats left'*) is used to boost consumer purchase behavior.

Despite the frequent usage of persuasion heuristics, their effectiveness in online context has rarely been tested (Slattery et al., 2013). Several studies focused on the online effectiveness of scarcity and social proof heuristics on purchase intention of clothing, electronics, holidays, and consumption goods (Gierl et al., 2008; Jeong and Kwon, 2012; Klaver, 2015). However, little is known about the effectiveness of these heuristics in the context of the culture and entertainment industry. This study aimed at investigating the effects of two persuasion heuristics, scarcity and social proof, on consumer responses in the online tickets store. The purpose of this study was 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 tickets store. The scarcity and social proof heuristics were chosen because these are widely used in online retail and have been proven to be effective in the offline context (Wann et al., 2004; Griskevicius et al., 2009; Aggarwal et al., 2011; Kaptein and Eckles, 2012).

Social Proof and Scarcity

The social proof principle implies that people strongly rely on others for cues on how to act, think and feel, especially in situations of uncertainty (Cialdini and Goldstein, 2002). Opera theatres have been familiar with the social proof principle for centuries. For instance, in the 19th century, the French theatre and opera hired so-called 'clagues' to applaud during the encore of a performance (Lupyan and Rifkin, 2003). As a result, the audience followed the behavior of the 'clagues'. 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 and Eckles, 2012).

The social proof principle also seems to be effective in the e-commerce. Jeong and Kwon (2012) found that the purchase intention was higher for respondents who were exposed to an online popularity claim (*'94% of consumers bought this product after viewing this site'*) than for those who were not exposed to the claim. *Booking.com* uses multiple social proof messages

on its website, including ‘booked 27 times today’, ‘6 people are looking at this moment’, and the ‘review score 8.7 (Fabulous) based on 4,448 reviews’. Based on the literature about the social proof principle, the following hypothesis was formulated:

H1: The presence of a social proof message will increase the product value and purchase intention compared to the absence of a social proof message.

The scarcity principle implies that restricted items are more valued than abundant items. This principle implicitly communicates to us ‘what is scarce is good’ (Dijksterhuis et al., 2005). Products or services that are ‘scarce’ serve as a cue for quality because they are perceived as ‘better’ than things that are easy to obtain (Cialdini, 2006). Marketers frequently use the scarcity principle to increase the subjective value of their products or services with phrases like ‘limited release’ or ‘limited time only’ (Lynn, 1991; Jung and Kellaris, 2004; Gierl et al., 2008).

The scarcity principle is frequently used online. For instance, *EasyJet* and other airlines use the scarcity principle to persuade consumers to book a flight with the messages like ‘Hurry! Only 3 seats left at this price’. Based on the literature about the scarcity principle, the following hypothesis was formulated:

H2: The presence of a scarcity message will increase the product value and purchase intention compared to the absence of a scarcity message.

Scarcity messages can tell consumers that they have to buy a product immediately or they will not be able to purchase it in the future (Wu et al., 2012). Therefore, time pressure is an important variable that can mediate the effect of the persuasion messages on product value and purchase intention. Hence, the following hypotheses were formulated:

H3: Social proof and scarcity messages will increase time pressure.

H4: Time pressure will increase the product value and purchase intention.

Uncertainty Avoidance and Persuasion Knowledge

Jung and Kellaris (2004) found that the influence of scarcity on purchase intention was more pronounced among individuals who scored high on uncertainty avoidance. People high in uncertainty avoidance rely more on decision heuristics to avoid uncertainty (Jung & Kellaris, 2004). For example, if such individuals see that there are only a few tickets left for a concert, they are much more inclined to purchase a ticket to reduce the level of uncertainty compared to more uncertainty-tolerant individuals. Therefore, the following hypothesis was formulated:

H5: High uncertainty avoidance will increase the effect of social proof and scarcity messages on time pressure, product value and purchase intention compared to low uncertainty avoidance.

People are exposed to many persuasive messages on television, internet, billboards, or in stores. Across time, consumers develop personal knowledge about persuasion attempts and tactics (Friestad and Wright, 1994). The activation of persuasion knowledge involves suspicion about the marketer’s motives and skepticism toward advertising messages (Kirmani and Zhu, 2007). Persuasion knowledge can help consumers to resist persuasion attempts (Tutaj and van Reijmersdal, 2012). Therefore, the level of persuasion knowledge can have an effect on the effectiveness of persuasion messages. Consequently, we formulated the following hypothesis:

H6: High persuasion knowledge will reduce the effect of social proof and scarcity on time pressure, product value and purchase intention compared to low persuasion knowledge.

METHOD

An online experiment was performed with a 2 (social proof vs. no social proof message) x 2 (scarcity vs. no scarcity message) between-subject design. Persuasion knowledge and uncertainty avoidance were used as the moderating variables.

Dutch participants (N=268) were recruited through the database of *Dutch National Opera & Ballet*. Most respondents (94.8%) bought opera tickets online at least once during the previous year. The age of participants ranged from 18 to 87 years, mean age was 56.4; 60.4% of the respondents were male. Most respondents (93.3%) completed a higher education: 29.5% had a college degree (HBO), 52.2% had a University degree (WO) and 11.6% had a PhD degree.

The data were collected in November 2016. Respondents were randomly assigned to one of the four versions of the ticketing website of *Dutch National Opera*. The demographic characteristics of participants did not differ between the four experimental conditions (all p 's > .05).

The following persuasive messages were used (see Fig. 1):

- Social proof: 'Popular: booked 39 times today'
- Scarcity: 'Only 8 tickets left'

The following constructs were measured in this study: *product value* (Dodds et al., 1991), *purchase intention* (Lee and Lee, 2009), *time pressure*, manipulation check scales for *social proof* and *scarcity* (Wu et al., 2012), *persuasion knowledge* (Rozendaal et al., 2010), and *uncertainty avoidance* (Jung and Kellaris, 2004). All scales demonstrated sufficient reliability (all Cronbach's α 's > .78).

RESULTS

To check whether the manipulations of social proof and scarcity were successful, a manipulation check was performed before the main analysis. The results revealed marginally significant differences in social proof perception in social proof condition ($M=3.52$, $SD= .68$) compared to non-social proof condition ($M=3.37$, $SD= .59$; $t=1.91$, $p= .057$). Mean scarcity perception in scarcity condition ($M=3.42$, $SD= .88$) was significantly higher than in non-scarcity condition ($M=3.14$, $SD= .74$; $t=2.80$, $p< .01$).

A two-way ANOVA was performed with *Social Proof* (present vs absent) and *Scarcity* (present vs absent) as the independent factors and *Product Value*, *Purchase Intention*, and *Time Pressure* as the dependent variables. A median split for persuasion knowledge ($MED=3.75$; $SD= .78$) and uncertainty avoidance ($MED=2.86$; $SD= .63$) was performed to further investigate possible moderating effects. The mean persuasion knowledge significantly differed between low ($M=3.12$; $SD= .60$) and high persuasion knowledge ($M=4.30$; $SD= .36$; $t= -20.07$, $p< .001$). The mean uncertainty avoidance significantly differed between low ($M=2.36$; $SD= .35$) and high uncertainty avoidance groups ($M=3.35$; $SD= .42$; $t= -21.27$; $p< .001$).

Time Pressure

First, a two-way ANOVA was performed with *Scarcity* (yes vs no) and *Social Proof* (yes vs no) on *Time Pressure*. Scarcity had a significant main effect on time pressure ($F(1)=9.47$; $p< .01$). Respondents in scarcity conditions experienced a higher time pressure ($M=3.41$; $SD= .91$) compared to respondents in non-scarcity conditions ($M=3.06$; $SD= .86$). The effect of of social

proof on time pressure was non-significant ($p > .05$).

Additionally, a three-way ANOVA was performed with *Uncertainty avoidance* (low vs high), *Social proof* (yes vs no), and *Scarcity* (yes vs no) on *Time pressure*. There was a marginally significant three-way interaction effect of uncertainty avoidance, social proof, and scarcity ($F(1)=3.29, p = .071$). Respondents who scored low on uncertainty avoidance experienced a higher sense of time pressure in the scarcity only condition ($M=3.55, SD=1.07$) compared to the control condition ($M=2.81, SD = .79$). The social proof message moderated this effect: the combined social proof and scarcity messages reduced the time pressure for these respondents compared to the single scarcity message, while the presence social proof message in the non-scarcity condition increased their time pressure (see Fig. 2A). Respondents who scored high on uncertainty avoidance (Fig. 2B) experienced higher time pressure in scarcity conditions ($M=3.44, SD = .72$) compared to non-scarcity conditions ($M=3.14, SD = .81$). However, they experienced lower time pressure in social proof conditions ($M=3.16, SD = .97$) compared to non-social proof conditions ($M=3.46; SD = .87$).

Finally, a 3-way ANOVA was performed with *Persuasion knowledge* (low vs high), *Social proof* (yes vs no), and *Scarcity* (yes vs no) on *Time pressure*. Persuasion knowledge had a significant effect on time pressure ($F(1)=4.45, p < .05$). Participants who scored high on persuasion knowledge experienced lower time pressure ($M=3.10, SD=.95$) compared to participants who scored low on persuasion knowledge ($M=3.33, SD=.86$). No interaction effects were found.

Purchase Intention

Scarcity had a significant main effect on purchase intention ($F(1)=4.85; p < .05$). Respondents in the scarcity condition had a lower purchase intention ($M=2.90; SD = .90$) compared to respondents in the non-scarcity condition ($M=3.14; SD = .88$). The main effects of social proof, uncertainty avoidance and persuasion knowledge on purchase intention were non-significant (all p 's $> .05$). No interaction effects were found.

Product Value

Persuasion knowledge had a significant main effect on product value ($F(1)=5.61, p < .05$). Participants who scored high on persuasion knowledge had a lower score on product value ($M=2.73; SD = .75$) compared to participants who scored low on persuasion knowledge ($M=2.94; SD = .68$). The main effects of social proof, scarcity and uncertainty avoidance on product value were non-significant (all p 's $> .05$). No interaction effects were found.

DISCUSSION

Confirming H3, the results showed a positive effect of scarcity message on time pressure. This is in line with the previous findings, suggesting that scarcity messages can communicate to consumers that they need to buy a product as soon as possible, otherwise they might not be able to purchase it (Wu et al., 2012). However, the effect of the increased time pressure on purchase intention was opposite to our expectations (H4 rejected). Contrary to H2, scarcity showed a negative effect on purchase intention. A possible explanation for the negative effect might be the fact that the scarcity message communicates to respondents that many people already have bought the tickets. As a result, the appropriateness of the scarce product as a status symbol decreases and a higher degree of uniqueness can no longer be achieved by purchasing this

product (Gierl et al., 2008). It could also be the case that the scarce tickets were not perceived as 'luxury' tickets. Perhaps the remaining tickets were perceived as 'bad seats' with a limited view on the stage that could not be used as a status or luxury symbol.

Another possible explanation for the negative effect of scarcity on purchase intention might be the fact that the respondents were highly educated. The respondents might be familiar with the scarcity message as a marketing 'trick'. If customers suspect that a retailer is manipulating scarcity cues to influence their buying choices, they may resist persuasion attempts ([Parker and Lehmann, 2011](#)). This might explain the negative effect of scarcity on purchase intention.

This explanation is in line with other findings of our study. Persuasion knowledge showed a significant effect on time pressure and product value. Participants who scored higher on persuasion knowledge experienced lower time pressure and evaluated a product lower compared to participants with lower persuasion knowledge (H6 confirmed). In our sample all participants showed high persuasion knowledge ($M=3.75$). Even participants with relatively low persuasion knowledge ($M=3.12$) scored higher than the midpoint of the 5-point scale.

No significant effects of social proof on time pressure, product value, or purchase intention were found (H1 not confirmed). One of the reasons could be the fact that the social proof manipulation was rather weak: manipulation check showed only a marginally significant effect of social proof message on the perception of social proof. Another explanation might be a specific characteristic of culture and entertainment industry, where a social proof message could be interpreted negatively, as the lack of exclusivity and uniqueness of the offer.

In line with H5, we found an interaction effect of uncertainty avoidance, social proof and scarcity on time pressure. Respondents who were low in uncertainty avoidance felt more time pressure in scarcity conditions than in non-scarcity conditions, while the effect of social proof on these respondents was non-significant. However, for people who were trying to avoid uncertainty, the scarcity message increased the feeling of time pressure, while the social proof message reduced the feeling of time pressure. This result confirms previous studies suggesting that people with high levels of uncertainty avoidance rely more on decision heuristics to avoid uncertainty ([Jung and Kellaris, 2004](#)). This result also suggests that for certain consumer groups using the combination of several persuasion messages might be less efficient than using one message.

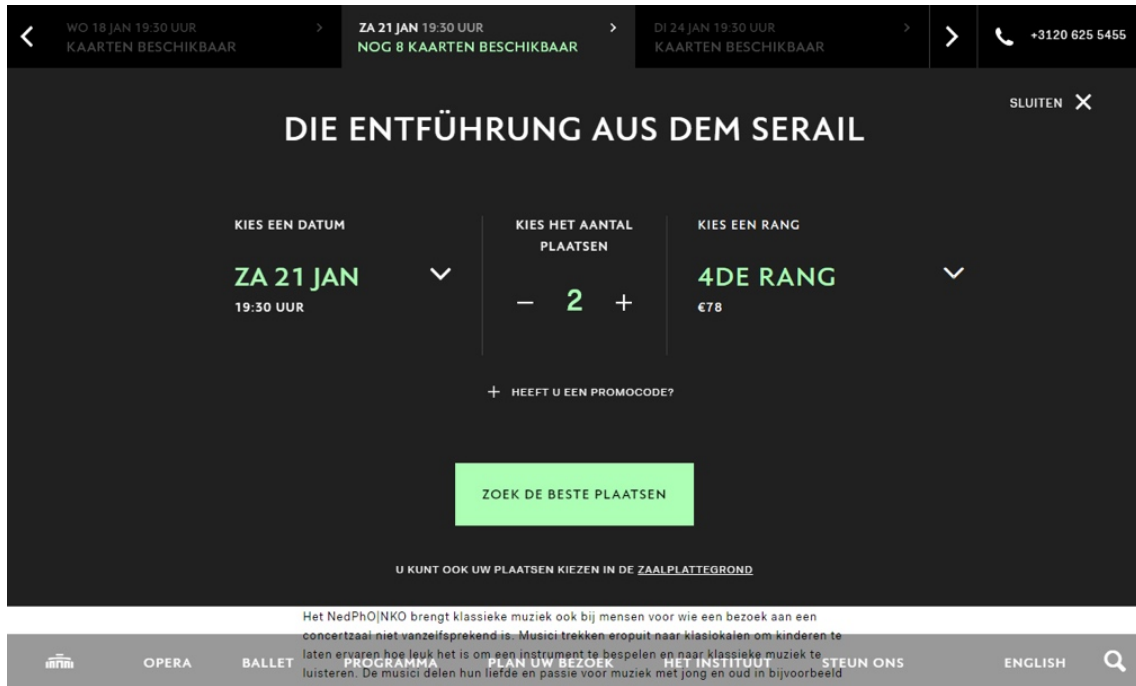
CONCLUSION

This study investigated the online effectiveness of social proof and scarcity messages in the context of culture and entertainment industry. The results have demonstrated that a scarcity message increased the experience of time pressure, but had a negative effect on purchase intention. We conclude that persuading people with social proof and scarcity heuristics should be used with caution, because it can have a negative effect on the purchase intention for specific consumer groups, such as highly educated people with high persuasion knowledge. Further research is needed to investigate whether the adverse effect of scarcity can be explained by the high persuasion knowledge of the target group or by the specific nature of the entertainment industry where scarcity messages might be interpreted as the signal of the lower product quality.

References

- Aggarwal, P., Jun, S. Y., & Huh, J. H. (2011). Scarcity messages. *Journal of Advertising*, 40(3), 19-30.
- CBS. (2016). Meer Nederlanders shoppen online. Retrieved September, 1, 2016, from <https://www.cbs.nl/nl-nl/nieuws/2016/24/meer-nederlanders-shoppen-online>
- Cialdini, R. B. (2001). Harnessing the science of persuasion. *Harvard Business Review*, 79(9), 72-81.
- Cialdini, R. B. (2006). *Influence: The psychology of persuasion*. New York: HarperCollins Business.
- Cialdini, R. B., & Goldstein, N. J. (2002). The science and practice of persuasion. *Cornell Hospitality Quarterly*, 43(2), 40.
- Dijksterhuis, A., Smith, P. K., Van Baaren, R. B., & Wigboldus, D. H. (2005). The unconscious consumer: Effects of environment on consumer behavior. *Journal of Consumer Psychology*, 15(3), 193-202.
- Dodds, W.B., Monroe, K.B. & Grewal, D. (1991) Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*, 28, 307-319.
- Friestad, M., & Wright, P. (1994). The persuasion knowledge model: How people cope with persuasion attempts. *Journal of Consumer Research*, 21(1), 1-31.
- Gierl, H., Plantsch, M., & Schweidler, J. (2008). Scarcity effects on sales volume in retail. *The International Review of Retail, Distribution and Consumer Research*, 18(1), 45-61.
- Griskevicius, V., Goldstein, N. J., Mortensen, C. R., Sundie, J. M., Cialdini, R. B., & Kenrick, D. T. (2009). Fear and loving in Las Vegas: Evolution, emotion, and persuasion. *Journal of Marketing Research*, 46(3), 384-395.
- Horvath, J. (2011). "Persuasive Design: It's Not Just about Selling Stuff," In *Design, User Experience, and Usability. Theory, Methods, Tools and Practice*, A. Marcus (ed.), Berlin: Springer, 567-574.
- Jeong, H. J., & Kwon, K. N. (2012). The effectiveness of two online persuasion claims: Limited product availability and product popularity. *Journal of promotion management*, 18(1), 83-99.
- Jung, J. M., & Kellaris, J. J. (2004). Cross-national differences in proneness to scarcity effects: The moderating roles of familiarity, uncertainty avoidance, and need for cognitive closure. *Psychology & Marketing*, 21(9), 739-753.
- Kaptein, M., & Eckles, D. (2012). Heterogeneity in the effects of online persuasion. *Journal of Interactive Marketing*, 26(3), 176-188.
- Kirmani, A., & Zhu, R. (2007). Vigilant against manipulation: The effect of regulatory focus on the use of persuasion knowledge. *Journal of Marketing Research*, 44(4), 688-701.
- Klaver, L.C.J.H. (2015). 'Buy now or cry later'. Do scarcity messages work in online shopping?: an investigation into the functionality of scarcity as an online persuasion measure within the fashion and travel industry. Unpublished manuscript, Faculty of Behavioural Sciences, University of Twente, Enschede, Netherlands.
- Kwallek, N., Soon, K., & Lewis, C. M. (2007). Work week productivity, visual complexity, and individual environmental sensitivity in three offices of different color interiors. *Color Research & Application*, 32(2), 130-143.
- Lee, J., & Lee, J. N. (2009). Understanding the product information inference process in electronic word-of-mouth: An objectivity-subjectivity dichotomy perspective. *Information & Management*, 46(5), 302-311.
- Lupyan, G., & Rifkin, I. (2003). Dynamics of applause: Modeling group phenomena through agent interaction. In Poster presented at the 25th Annual Conference of the Cognitive Science Society.

- Lynn, M. (1991). Scarcity effects on value: A quantitative review of the commodity theory literature. *Psychology & Marketing*, 8(1), 43-57.
- Parker, J. R., & Lehmann. D. R. (2011). When shelf-based scarcity impacts consumer preferences. *Journal of Retailing*. 87(2): 142-155.
- Rozendaal, E., Buijzen, M., & Valkenburg, P. (2010). Comparing children's and adults' cognitive advertising competences in the Netherlands. *Journal of Children and Media*, 4(1), 77-89.
- Slattery, P., Simpson, J.R., & Utesheva, A. (2013). Online persuasion as psychological transition, and the multifaced agents of persuasion: A personal construct theory perspective. *Proceedings of the 24th Australasian Conference on Information Systems*, 1-11.
- Tutaj, K., & van Reijmersdal, E. A. (2012). Effects of online advertising format and persuasion knowledge on audience reactions. *Journal of Marketing Communications*, 18(1), 5-18.
- Wann, D. L., Bayens, C., & Driver, A. (2004). Likelihood of attending a sporting event as a function of ticket scarcity and team identification. *Sport marketing quarterly*, 13(4), 209-215.
- Wu, W.Y., Lu, H.Y., Wu, Y.Y., & Fu, C.S. (2012). The effects of product scarcity and consumers' need for uniqueness on purchase intention. *International Journal of Consumer Studies*, 36(3), 263-274.

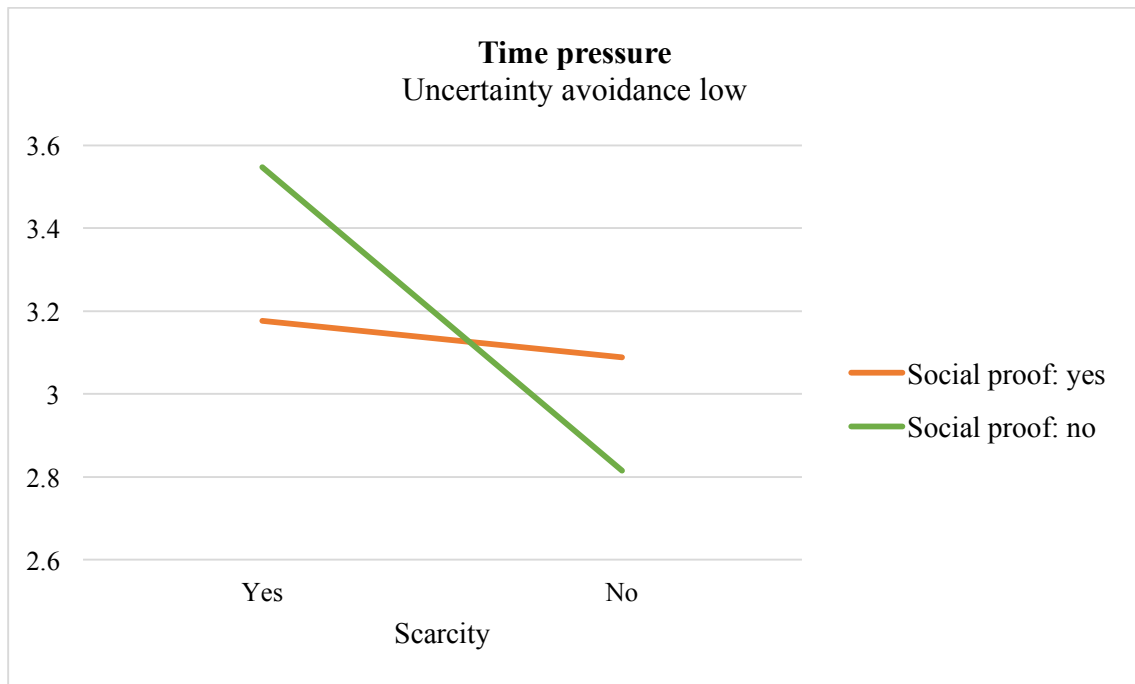


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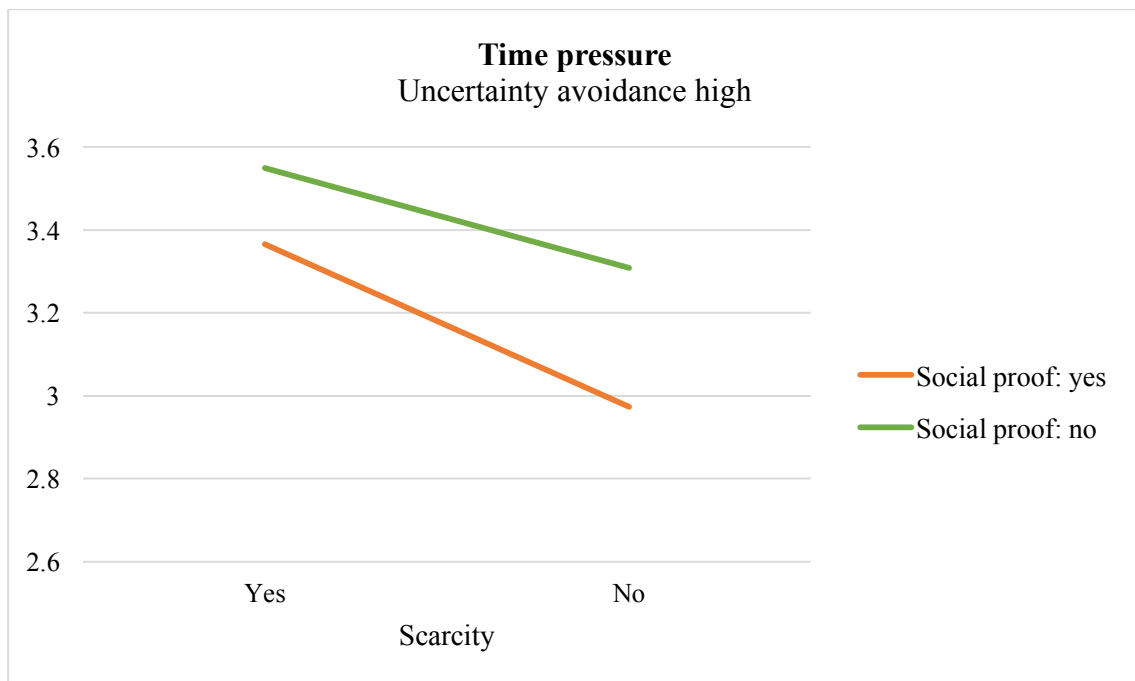


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Figure 1. Examples of ticketing website: A) with scarcity message; B) with social proof message.



A



B

Figure 2. Interaction effect of uncertainty avoidance, social proof, and scarcity on time pressure