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The moderating role of preference extremity and certainty on personalized advertising

Abstract

Personalization is nowadays an interesting concept for marketeers. This is because it is useful to contact customers in a way where their personal information is used to target them. This paper investigates the relationship between perceived personalization on attitude and intention, adding moderating effects of preference extremity and preference certainty. Previous literature has shown significant effects of personalization efforts on customers' attitude and purchase intention. Literature has also shown that there are many personal characteristics that determine how effective the personalization effort is. A person's preferences are seen as one of those characteristics. Preference extremity has been tested before, however, preference certainty not. Therefore, the goal of this study is to find any relation between personalization and a customer's attitude and intention, adding customers' preference extremity and preference certainty.

This study consists of an experiment, where 360 respondents successfully finished the experiment. The results begin with a positive significant effect of perceived personalization on all three dependent variables: attitude towards the message, attitude towards the brand and purchase intention. The second part of the results show that preference extremity has no significant effect on any of the dependent variables. However, the third part shows that there is a significant moderating effect of a persons' preference certainty on the relationship between perceived personalization and attitude and intention. The conclusion of all results regarding preference certainty is that respondents with certain preferences have a more positive attitude and purchase intention, compared to those with less certain preferences.

The output of this study is valuable for marketeers, since they get more information about the relationship between personalization and customers' attitude and intention, when looking at the preference characteristics of a customer. They should take into consideration that personalization has a more positive effect on customers with certain preferences, regarding their attitude and intentions.

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1. Introduction

For the last couple of years, marketers have experienced a change in their environment. Instead of focusing on a target group as a whole, they now have to focus on targeting a segment or even an individual. The reason that led to this conceptual change, is the upcoming trend of personalization.

Personalization is described as "when the firm decides what marketing mix is suitable for the individual" (Arora et al., 2008). It is used to create customer value through e-commerce and websites and the goal is to match the personalized advertisement to the preferences of the individual (Wessel & Thies, 2015, Li, Liu & Hong, 2018).

Preferences play a big role in the effect of personalization. Previous studies show that personal characteristics play an important role in the perceived value of the persuasion message (Areni, Ferrell & Wilcox, 2000; Tam & Ho, 2005). Personal characteristics represent the attitude of the customer, so it's proven that attitude plays a big role in personalization.

Many attributes can be used to display the strength of someone's attitude (Krosnick & Petty, 1995). Scott (1968) describes ten such attributes in his chapter in the Handbook of Social Psychology: extremity, intensity, salience, etc. Raden (1985) expanded this list with adding some attributes, like accessibility, certainty and importance. One point that is examined much is the correlation between these types of attitude features. Krosnick & Abelson (1992) say that the higher an attitude is in extremity, accessibility, importance and certainty, the more persistent and influential on thinking and action it is. Some of these attributes are explained by using other attributes.

1.1 Research problem & motivation

Concepts like extremity and certainty have been studied a lot. They are both constructs in the work of Krosnick & Petty (1995) and both positively correlated with accessibility (Fazio, 1995). Also, both concepts are used in the literature to measure the concept "intensity"; certainty used by Brim, 1995 and Guttman & Suchman, 1947; extremity used by McDill,

1959 and Tannenbaum, 1956. However, current conceptualization of personalization does not include extremity and certainty. Li, Liu & Hong (2018) have investigated preference extremity and preference stability and Shen and Ball (2011) studies the effect of preference stability on personalized communication. Studies about the effects of both preference extremity and preference certainty are not done yet. To contribute to the current literature, this study will

investigate whether the effectiveness of personalization depends on preference extremity and preference certainty.

Preference extremity & personalization

Preference extremity is a concept that influences someone's preference strength (Krosnick & Petty, 1995). It represents the magnitude of favorable/unfavorable attitudes (Shrum, 1999). The more extreme an attitude becomes, the more a person departs from neutrality (Binder, Dalrymple, Brossard & Scheufele, 2009). In a study of Li, Liu & Hong (2018), extremity is measured as "the difference of magnitude between a person's most preferred choice and least preferred choice toward a certain object." In terms of preferences, a bigger difference represents a higher level of preference extremity.

Preference certainty & personalization

There are various attributes that differentiate stable and consequential attributes from those that are not, including certainty (Krosnick et al., 1993). They describe attitude certainty as "the degree of which an individual is confident that his or her attitude toward an object is correct and is usually gauged by self-reports of certainty or confidence" (Budd, 1986; Krosnick & Schuman, 1988; Krosnick et al., 1993). When a customer has uncertain preferences, his evaluations of the attractiveness of a customized offer are likely to be influenced significantly by the manner in which it is presented (Simonson, 2005). For customers with good-defined preferences, personalization can magnify the preference certainty of this customer (Broniarczyk & Griffin, 2014). However, for customers with ill-defined preferences, who do not know how certain attributes increase the likeability of that choice, personalization is hard to apply since the customer does not identify the attributes as best fit (Simonson, 2005). So, preference certainty is another concept that can influence the personalization effect.

1.2 Research objectives

In this thesis, previous findings will be studied and the effect of personalization on customers' attitude and purchase intention will be tested with possible moderating effects of preference extremity and preference certainty. The goal of this research is to see if certain, extreme preferences influence the personalization effect. This will help marketers with how to use personalization in such a way it creates a positive effect on a customers' attitude and purchase intention. The research question is as follows:

"What is the impact of preference extremity and preference certainty on the effect of perceived personalized messages on attitude and purchase intention"

1.3 Relevance

Personalization keeps being an important concept for marketers to study, since this teaches them how to apply this to their customers. This is necessary these days, since previous studies have shown that personalized advertising influences the attitude and purchase intention of the customers in a positive way (Arora et al., 2008; Franke & Schreier, 2008; Maslowska, Smit & Van der Putte, 2011). This makes it important for marketers to understand how to apply personalization and on what kind of customers it is most effective. This can depend on the preference attributes of a customer. Since the attitude of customers is an important part of the effect for personalized messages, this in turn is important in the literature regarding personalization. Studies show that preference extremity as well as preference certainty are important factors when looking at the attitude strength of customers (Krosnick et al., 1993, Krosnick & Petty, 1995). Both concepts have been studied, however not in the deep way that is necessary to further complete the conceptualization of personalization. Preference certainty has been studied regarding preference learning and regarding the connection with preference strength, but not regarding personalization (Kingsley & Brown, 2010; Krosnick et al., 1993). Preference extremity has been studied deeper regarding personalization (Li et al., 2018), however not in combination with preference certainty. This paper will close this gap in the literature and investigate the effects of preference certainty and preference extremity. In this way, marketeers can focus on the right type of customer to target with personalized advertisements and therefore increase their attitudes and purchase intentions.

1.4 Research methodology

To answer the research question, an experiment has to be done. The web-based experiment exists of multiple parts.

The survey will begin in an easy way to find out something about the respondents. Socio-demographics will be asked and their general interest for ordering meals will be tested. Next, the respondents are asked to answer four questions regarding their preference certainty. Preference certainty will be measured on a Likert-scale, with questions where respondents answer about their own interpretation of their certainty. Example questions are *"I am certain*

about my preferences regarding ordering meals" and *"I find it difficult to divide my preferences between meals."*

The last part of the experiment is focused on how to measure the effect of personalization on attitude and purchase intention. The respondents will be randomly divided into two groups, where half of the respondents will see a personalized ad and the other half will see a generic ad. Here, the respondent will fill in his purchase intention for the product in the ad. After this, they will answer questions regarding their attitude towards the ad and brand. Example questions can be *"I perceived the ad as a personalized one"* and *"I enjoyed this advertisement".* With this part of the experiment, the effect of perceived personalization on attitude and purchase intention can be tested.

At the end of the survey, questions regarding respondents' preference extremity are asked. Preference extremity will be measured in the same way Li, Liu & Hong did. Participants will report their interest in each product on a 0 to 100 scale where 0 means "not interested at all" and 100 means "very interested". Extremity will then be calculated by taking the interest score of the highest preferred product minus the interest score of the least preferred product.
Considering all parts of the experiment, this will lead to an answer on the research question.

1.4 Thesis outline

The next chapter that follows is the literature review. Here, literature will be reviewed and used to form the hypotheses, which will form the conceptual model. After this, the experiment will be introduced, and an explanation of the methodology and data will be given. After this, the results of the experiment will be discussed, and these will answer the hypotheses. This will lead to an answer to the research question. After this, there will follow a conclusion and a discussion about the experiment. Limitations and recommendations for future research will also be added.

2. Literature Review

This section of the paper will review existing literature by discussing findings that are relevant for this topic. The variables that will create the conceptual model will be discussed. The relationships between these variables will be explained and hereby the conceptual model will be composed.

2.1 Personalization

Personalization is described as the process of targeting individual customers as individual segments by satisfying their specific needs (Bardakci & Whitelock, 2003). It increases perceived product uniqueness, aesthetics and functional fit (Franke & Schreier, 2008).
The essence of personalization is to create a match between a message and its recipient (Kalyanaraman & Sundar, 2006). Personalization can be used as a communication strategy that is focused on making this message more meaningful and thus persuasive (Maslowska, Smit & Van der Putte, 2011). This strategy is tailored to each customer by understanding their needs, preferences and attitude (Kim, 2002).

2.1.1 Personalization and customization

Much research is focused on which method works better for the customer: personalization or customization (Arora et al., 2008; Sundar & Marathe, 2010). The difference between the methods is described as "the distinction between system-initiated personalization and user-initiated personalization" (Sundar & Marathe, 2010). Personalization is "when the firm decides, usually based on previously collected customer data, what marketing mix is suitable for the individual" whereas customization is "when the customer proactively specifies one or more elements of his or her marketing mix" (Arora et al., 2008). Both concepts are heavily used in marketing, but the focus now is more on personalization. The problem with personalization is that it can create a negative effect for the customer, since customers worry about how their data are collected and used (Aguirre, Roggeveen, Grewal & Wetzels, 2016).
Personalization can be seen as the solution for the debate about standardization and customization. It combines both concepts, since it "offers tailored products to suit individual customer preferences at a cost similar to that of standard products by adopting efficient production systems and mass marketing" (Moon et al., 2008). This study focuses on the process of personalization

2.1.2 ELM

Most studies adopt the ELM method to see how personalization influences attitude and customers' information process (Li, 2016; Li et al., 2018; Maslowska et al., 2013). The elaboration likelihood model, better known as the ELM, was designed by Cacioppo and Petty (1984) and it concludes that the information processing of a customer can follow two ways: the central route or the peripheral route, where the central route represents the systematic view of persuasion and the peripheral route represents the heuristic view of persuasion (Chaiken, 1982). With respect to personalization, the central route is used by people when processing personalized messages (Kalyanaraman & Sunder, 2006; Li, 2016). If the customer receives the information as relevant, the communication outcomes will be increased (Kreuter & Wray, 2003). Following the ELM, when people consider the message as more relevant, they feel more positive towards the message.

2.1.3 Personalized advertisements

To use the gained personal information and deliver it to the customer, a message needs to be created. A personalized message is individual-specific, since individual-specific information is being used to target that person (Maslowska et al.,2013). The goal of personalized advertising is to match the message with the individuals' preferences (Li, Liu & Hong, 2018). A problem can be if the customer does not show his/her real preferences in the first phase, then the company will read these preferences in the wrong way and the customer will not perceive the personalized message as a personalized one. So that makes it important for companies to read the preferences of the customer in the right way.

2.2 Variables

2.2.1 Personalization

To figure out particular personal information about a customer, data needs to be collected. This can be done in two ways, overt or covert. Overt is when the customer is directly asked about his/her information via a questionnaire, covert is when the customers' data is tracked (Murthi & Sarkar, 2003). When making use of overt collected data, companies only get access to a limited amount of information, mainly demographics. Yu & Cude (2009) discovered that customers generally have a negative perception of firms who contact them with personal

information. On the other hand, firms can create opportunities to get deep connections with their customers (Urban, Liberali, MacDonald, Bordley & Hauser, 2014).

When making use of covert collected data, recommendation systems are built to learn about the preferences of the customer and in turn recommend personalized offers (Shen & Ball, 2011; Riedl, 2001). For companies, this leads to more personal information than the overt way, so it is easier for the company to target the customer individually. On the other hand, customers feel more violated in their privacy when being targeted with data they did not share themselves. They feel manipulated and this in turn can provoke privacy concerns (Aguirre et al., 2016). So, since covert collected data uses customers' preferences, it can create more personalized messages than using overt collected data.

An important part of personalization is the perceptibility of it. Personalization only works if the customer also perceived the personalization. That is why this study will use perceived personalization as an independent variable.

H1: A personalized message leads to more perceived personalization than a non-personalized message.

2.2.2 Attitude

So, based on the preferences of a customer, making a message more personalized will influence the opinion of this customer considering their direction of thinking and attitude (Briñol & Petty, 2006). A customer's attitude can be described as evaluations of certain objects (Petty & Krosnick, 1995). Previous studies have conducted experiments where they proved that personalized messages create more favorable reactions of customers than non-personalized messages on attitude (Kalyanaraman & Sundar, 2006; Li et al., 2018). Many studies use attitude towards the message as well as attitude towards the brand as measures (Li et al., 2018; Maslowska et al., 2013).

H2a: Perceived personalization leads to a more positive attitude towards the message

H2b: Perceived personalization leads to a more positive attitude towards the brand

2.2.3 Purchase Intention

Another way of measuring the effect of personalization on a customer is to look at his/her behavioral intention. Intentions can be seen different from attitudes, because intentions are not evaluations, but motivations. Prior studies have measured the effect of personalization by using the purchase intention of the customer (Li et al., 2018; Maslowska et al., 2013).

Based on these prior studies, this paper will also use attitude and purchase intention to measure the effect of personalization. Therefore, the hypotheses regarding the personalization effect on attitude and purchase intention will be as followed:

H2c: Perceived personalization leads to a higher level of purchase intention.

2.3 Preferences

Personalization assumes that customers have preferences and that firms use these preferences to create personalized messages to this customer (Simonson, 2005). So, to create a successful personalized message, the preferences of the customer need to be learned. After this, these preferences can be used to create a personalized message for this particular customer. Those are the two phases that create the personalized communication process (Li et al., 2018). Preferences are constructed (Bettman, Luce, & Payne, 1998). Prior studies have focused on the factors that influence this construction of preferences. Some of these are the time of purchase, experience with the product and knowledge of the product (Peters, 2006; Arora et al., 2008; Simonson, 2005). In this study, the extremity and certainty of preferences will be used to see if these preference characteristics influence the personalization effect.

2.3.1 Preference Extremity

In previous literature, preference extremity is one of the factors that describes a customer's attitude (Scott, 1968). It has been discussed in prior communication literature as preference extremity as well as attitude extremity (Binder, Dalrymple, Brossars & Scheufele, 2009; Shrum, 1999). Extremity represents the magnitude of the attitude of a customer in a way that it shows how favorable or unfavorable his/her attitude is (Shrum, 1999). Li et al. (2018) measured preference extremity as "the difference of magnitude between a person's most preferred choice and least preferred choice toward a certain object." In terms of preferences, a bigger difference represents a higher level of preference extremity. Since preference extremity influences a customers' attitude towards an advertisement or a brand, this is a relevant issue in this study. Li, Ling et Ho (2018) have determined that high preference extremity will lead to a more positive ad and brand attitude. Therefore, the following hypotheses are included:

H3a: The effect of perceived personalization on attitude towards the message is stronger for individuals with high preference extremity.

H3b: The effect of perceived personalization on attitude towards the brand is stronger for individuals with high preference extremity.

Respondents often are asked to rank a certain number of choices and identify their least and most preferred choices (Tam & Ho, 2005; Li, 2016; Li et al., 2018). After this, their most preferred choice will be used to create a personalized message. If, after this, the rest of the choices will be considered irrelevant, while this may not be the case, the effect of personalization can be neglected. If a least preferred choice is considered as irrelevant by the experimenter, while the respondent considered the choice as relevant, this choice can also be used for a personalized message, without knowing it by the experimenter. In this way, the experimenter could create a non-personalized message, while the respondent may think about this message as a perceived relevant message. This can be a problem, since perceived personal relevance is a driver of favorable personalization effects (Noar, Harrington & Aldrich, 2009). So, it is possible that preference extremity moderates the effect of personalization. High preference extremity will arise when a person's evaluations of alternate choices are different, low preference extremity when the choices are indifferent. According to the study of Li et al. (2018), high preference extremity will lead to a higher purchase intention when using a personalized message, relative to a non-personalized message. This leads to the following hypothesis:

H3c: The effect of perceived personalization on purchase intention is stronger for individuals with high preference extremity.

2.3.2 Preference Certainty

Another factor that describes a customer's attitude is preference certainty (Raden, 1985). Preference certainty, or attitude certainty, is described in previous literature as "the degree of which an individual is confident that his or her attitude toward an object is correct" (Budd, 1986; Krosnick & Schuman, 1988; Krosnick et al., 1993). It usually is measured by self-reports of customers about certainty or confidence. Studies show that customers' preferences become more certain when they are fine-tuning their preferences, since fine-tuning means that their preferences were uncertain (Brown, Kingsley, Peterson, Flores, Clarke & Birjulin, 2008). Other research has shown that the probability uncertainty can be reduced by greater utility differences between choices and by repetition and experience with the choice task (Bateman, Burgess, Hutchinson & Matthews, 2008; Kingsley & Brown, 2010). Preference uncertainty can

influence the attractiveness of a certain personalized offer by the manner in which it is presented (Simonson, 2005). Preference uncertainty can both benefit and hurt in the current world where options are unlimited. This is because on the one hand, customers have so much choice they can search for their most-preferred choice. On the other hand, if there are only small differences in the attractiveness of all these options, preference uncertainty will be magnified (Dhar, 1997).

While various concepts that influence a customer's attitude have been tested as a moderator on a personalization effect, like extremity, stability and relevance, preference certainty has not yet been tested in combination with a personalization effect (Li et al., 2018; Kalyanaraman & Sunder, 2006). Since this is missing in existing literature, this will be tested in this study.

H4a: The effect of perceived personalization on attitude towards the message is stronger for individuals with high preference certainty.

H4b: The effect of perceived personalization on attitude towards the brand is stronger for individuals with high preference certainty.

An assumption is that when a respondent's preferences are certain, he/she recognizes the personalized message as a personalized one and therefore will increase his purchase intention. Studies have suggested that moderators like consumer characteristics affect purchase intention (Evanschitzky & Wunderlich, 2006; Walsh et al., 2008). Furthermore, purchase intention is a commonly used concept in measuring the effect of personalization (Li, Liu & Hong, 2018; Spears & Singh, 2004). Therefore, the following hypothesis is added:

H4c: The effect of perceived personalization on purchase intention is stronger for individuals with high preference certainty.

2.4 Conceptual Model

Figure 1 shows the conceptual model that can be generated with the hypotheses. Table 1 gives an overview of the hypotheses.

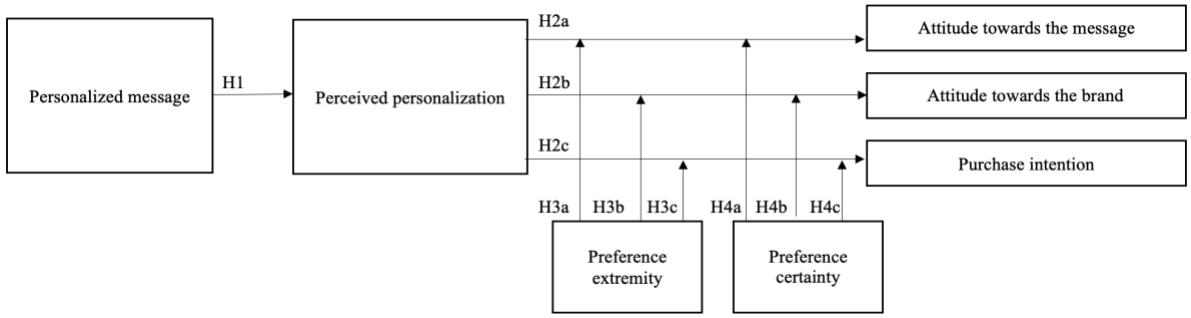

Figure 1: Conceptual model

Table 1

Overview of hypotheses

H1	A personalized message leads to more perceived personalization than a non-personalized message.
H2a	Perceived personalization leads to a more positive attitude towards the message
H2b	Perceived personalization leads to a more positive attitude towards the brand
H2c	Perceived personalization leads to a higher level of purchase intention
H3a	The effect of perceived personalization on attitude towards the message is stronger for individuals with high preference extremity.
H3b	The effect of perceived personalization on attitude towards the brand is stronger for individuals with high preference extremity.
H3c	The effect of perceived personalization on purchase intention is stronger for individuals with high preference extremity.
H4a	The effect of perceived personalization on attitude towards the message is stronger for individuals with high preference certainty.
H4b	The effect of perceived personalization on attitude towards the brand is stronger for individuals with high preference certainty.
H4c	The effect of perceived personalization on purchase intention is stronger for individuals with high preference certainty.

3. Method

In this part of the study, the research design, data collection, manipulation and procedure of the experiment will be handled.

3.1 Research Design

This paper will investigate whether there is a relationship between personalization and the attitude and purchase intention of a consumer. This relationship can be seen as a causal relation, since the experiment will test if personalization causes a more positive attitude and/or purchase intention. Since all three dependent variables, attitude towards the message, attitude towards the brand and purchase intention, will be looked at separately, a correlation between the three is not investigated. This is why separate tests are allowed (Huberty & Morris, 1989). So, for every dependent variable, a separate regression will be run. Furthermore, the characteristics preference extremity and preference certainty will be investigated to see if they have something to do with the examined relationship. Since the goal of this paper is to reach conclusions about a particular relationship, it can be called a conclusive research design. The 2 (personalized vs non-personalized) x 2 (preference extremity: low vs high) x 2 (preference certainty: low vs high) experiment will take the form of a web-experiment. This will be done, since this is the most appropriate way to test a causal relationship and it allows the respondents to participate in the research at the time and location they want, which leads to a possible larger sample than with a traditional experiment (Finley & Penningroth, 2015; Malhotra & Birks, 2007; Reips, 2000). The design chosen for the experiment is between-subjects. This means respondents will take place in only one treatment, which differs from a within-subject design, where all respondents take place in all treatments. In this study, the experiment is receiving either a personalized message or a non-personalized message. Respondents will only be exposed to one of them. An advantage of a between-subject design is that it lowers the chance that respondents will get bored, due to all the possible treatments (Malhotra & Birks. 2007). Another advantage is that it controls for demand bias. Demand bias refers to the situation where respondents know they are participating in an experiment and therefore change their behavior (Charness, Gneezy & Kuhn, 2012). A between-subject design may also create more external validity, compared to a within-subject design (Charness, Gneezy & Kuhn, 2012). The manipulation in this experiment will be applied on the personalized message. As mentioned before, respondents will either see a personalized ad, based on their preferences, or a non-personalized ad.

Preference extremity and preference certainty will not be manipulated, since these are expressions of the respondents' themselves.

3.2 Sampling and Data Collection

The target group of the experiment will be consumers. Since most living people can be defined as consumers, the population for this experiment can be large and respondents can easily be found. Since a goal of this experiment is to create as much data as possible, a convenience sample will be used. This means that the sample is part of the population that can easily be reached by the experimenter (Malhotra & Birks, 2007). Convenience sampling is better known as the most effective way to gather sufficient data. One disadvantage of this method is that it is a non-probability sampling, which means not all members of the population have an equal chance of participating in the study. A weakness of this is its subjectivity, since a subjective evaluation is needed to choose a representative sample (Kalton, 1983). Convenience sampling also suffers from self-selection sampling bias. This means the experimenter does not know if the large population is represented by a self-selected sample (Lavrakas, 2019). This can be fixed by making sure the respondents cannot self-select them into the treatment and control group. In this case, that will be done by randomly assigning respondents to the treatment (personalized advertisement) and control (non-personalized advertisement) groups.

The experiment will be distributed on the internet, and since the target group exists of consumers, it is assumed that the desired number of respondents will be achieved by distributing the survey online through social media etc.

3.3 Manipulation

The experiment will be manipulated by changing the type of advertisement in personalized or non-personalized. The personalized advertisement is based on the preferences of the respondent. These preferences can be determined after the respondents correctly filled them in. They will be asked to choose their most-preferred option in a choice set of 8 meals which they can order to eat at home. These meals are sandwiches, Chinese food, Indian food, Dutch food, Japanese food, fast food, grilled food and Italian food. These 8 options are defined as the most popular meals to order in the Netherlands, according to Business Insider (2017). Since this research uses dinner meals as the preference measurement, sandwiches will not be used since this food is not comparable with the rest of the options. The respondents are randomly assigned to either receiving a personalized ad or a non-personalized ad. The personalized advertisement will be based on the most-preferred choice of the respondent. The non-personalized

advertisement will show 2 ads next to each other, which show the most common chosen meals, namely fast food and Italian food. The advertisement shows a slogan, “Click here for the [meal] restaurants in your neighborhood!” The advertisement also shows a picture of the relevant meal, to make it clear to the respondent what kind of food is mentioned. The rest of the advertisement will be held constant, since other experiments have shown this approach is successful (Li, 2016; Li et al., 2018). The advertisement will be shown on a website, since this leads to a more realistic experience for the respondent. An example of the website and an advertisement can be found in Appendix A2 and A3.

3.4 Measurements

3.4.1 Attitude

Both attitude towards the ad and attitude towards the brand are dependent variables that will be measured after the manipulation. They will be measured on a four-item scale: good-bad, like-dislike, favorable-unfavorable and interesting-boring, adapted from MacKenzie, Lutz & Belch (1986). All pairs of adjectives will be used on a 7-point semantic scale. 1 means bad (dislike, unfavorable and boring) and 7 means good (like, favorable and interesting).

3.4.2 Purchase Intention

Participants' purchase intention will be measured by the answers to 2 questions: *“I am likely to use the website”* and *“I am likely to buy things from the website.”* This measure is adapted from Li and Kalyanaraman (2012) and Li et al. (2018). The responses are measured on a 7-point Likert-scale.

3.4.3 Perceived Personalization

Perceived personalization of the ad is used as a manipulation check. This is done to see if the respondent was aware of the personalization. This will be measured with the questions *“The ad reflects my special characteristics”* and *“The ad targets me as a unique individual.”* These questions are adapted from Kalyanaraman & Sundar (2006) and Li et al. (2018) and also measured on a 7-point Likert-scale.

3.4.4 Preference Extremity

The variable preference extremity will be measured using the method of Li et al. (2018). So, extremity will be measured by subtracting the interest score of the least-preferred meal from that of the most-preferred meal. In this way, a respondent can be seen as one with low extremity or high extremity.

3.4.5 Preference Certainty

The variable preference certainty will be measured by multiple questions. Preference certainty depends on how many choices the choice set provides to the consumer (Broniarczyk & Griffin, 2014). With ordering meals online, the options are almost infinite and every consumer has the same choice, but that is not manageable in an experiment. Therefore, in this experiment respondents are exposed to 8 choices. Preference certainty is seen as a character respondents need to value themselves, so it can be measured by using questions like *"I am certain about my preferences regarding ordering meals"* and *"I find it difficult to divide my preferences between meals."* The questions can be found in the survey in Appendix A1. Four questions were asked to the respondents on a 7-point Likert scale. Question 2, 3 and 4 are reversed questions.

3.5 Control Variables

Control variables are added to the experiment to make sure the impact on the dependent variables is due to the effect of the independent variables and not to the effect of extraneous variables. In this way, it is certain that the effect is caused by the manipulation of the independent variables. The control variables that are added are privacy concern and interest in ordering meals. Both control variables are included in every regression regarding the hypotheses.

3.5.1 Privacy Concern

Personalization can have a positive impact on consumers, since they get more personalized offers, but it can also create a negative impact due to privacy concerns, since this can lead to consumers worrying about how their data is collected (Aguirre, Roggeveen, Grewal & Wetzels, 2016). Therefore, privacy concerns are included as a control variable. It will be measured using a 4 item 7-point Likert scale, adopted from Chellappa & Sin (2005). The four statements that are used can be found in the survey in Appendix A1.

3.5.2 General Interest

The other control variable that is included, is interest in ordering meals. This variable is included to control for the general interest of ordering meals of the respondents. The two statements that will measure this, are *"I am interested in ordering meals"* and *"I frequently order meals."* These statements will be measured on a 7-point Likert scale.

3.6 Pilot Study

Before sending out the survey, a pilot study was done to see if all the questions were clear. 25 respondents completed the survey. After receiving the feedback from the respondents in the pilot study, some changes were made. For example, the demographic questions about age and nationality were expanded with an example, so the respondents knew more clearly what kind of answer was expected. In the first case, the preferences of the respondents were asked in the first part of the experiment. It was clear the questions regarding the respondents' preferences could make them biased, since the respondents who received the non-personalized ad could create a negative feeling due to their preferences that were not used to target them. The lay-out of the survey was therefore changed. Now, the respondents were randomized and the respondents who received a personalized ad were first asked what their most-preferred meal was. Then, they were redirected to the website with this meal as an advertisement. The filler task was added between these two parts, so no demand bias was created. At the end of the survey, after the experiment, all respondents were asked to describe their preferences, so this would not influence the responses of the non-personalized ad receivers. As last point, in the introduction it stated that the survey would take approximately 10 minutes to fill in. Even though all respondents of the pilot group finished the survey between 7 minutes, 10 minutes was held as an example, so respondents would not hurry to finish the survey.

3.7 Procedure

Many experiments about personalization follow a two-phase concept (Shen & Ball, 2011; Wan, 2008; Li et al., 2018). Therefore, this experiment will also follow this concept. The first phase will consist of the part where respondents answer a certain number of basic questions. These questions will consist of demographic information and interest in ordering meals. After finishing the first part of the survey, a filler task is added to the survey to make sure the time between phase 1 and phase 2 is delayed. The filler task will show 4 typical pictures that each represent a country in the world, with a scroll-down menu to choose which country best

represents the picture. Since these questions are added as a filler task, the results will not be analyzed since they do not add value for answering the hypotheses. After this, the respondents were randomly assigned to either receiving a personalized or non-personalized ad. The receivers of the non-personalized ad were redirected to a website showing an ad about the two most commonly chosen meals, namely fast food and Italian food. The receivers of the personalized ad were first asked to choose their most-preferred option. After doing this, they were redirected to the relevant website, showing the ad about this option. All respondents were asked to return to the survey after having a good look at the website.

In the next part of the survey, several questions were asked to the respondents. First, as an attention check, the respondents were asked which meal was shown in the advertisement on the website. In this question, they can check multiple boxes, since the non-personalized ad receivers were shown two advertisements. Next, they were asked to indicate their feelings towards the advertisement and the website. They also needed to indicate their purchase intention for the website and their perceived personalization. Next, they were asked the four questions regarding their privacy concern as a control variable. In the last question, all respondents were asked to score all 8 kitchens on a 0-100 scale. With this question, the preference extremity for all respondents can be calculated, without biasing the respondents. The complete survey can be found in Appendix A1. During the entire experiment, a cover story is used to make sure the respondents are not aware of the goal of the study. This is done to make sure they do not answer in a different way than when they do not know the purpose of the experiment. The respondents are told they are acting in an experiment about ordering food to collect different opinions.

3.8 Data Analysis

To analyze the results in a way that the hypotheses can be answered, the statistical software package SPSS will be used. Different regressions will be performed to analyze the results. The effect of personalization on attitude and purchase intention will be measured using a regression analysis. The moderators, preference certainty and preference extremity, will both be tested in separate regressions. An additional regression analysis will be added using all variables, to see if there are any joint effects.

4. Results

In the following part, the analysis of the collected data will take place. First, the descriptive statistics will be presented. Second, the influence of personalization on the dependent variables will be explained on the basis of the performed regression. Third, the moderators preference extremity and preference certainty are added in the regression to see their additional effects.

4.1 Descriptive Statistics

In total, 400 respondents filled in the survey. After deleting the respondents who did not manage to complete the survey and the respondents who were part of the pilot group, a total of 388 was left. There were still some respondents, after the pilot test, who did not manage to fill in a correct answer for their nationality or their age, so they were also excluded. This left a number of 362 respondents. Since all questions were set up with "force response", there were no extra missing values. After checking the total duration of the survey, 2 additional respondents were excluded, since their time was unrealistic for completion of the survey. So, the final number of respondents applicable to the analyses was 360.

The final sample consisted of 51.9% males (N=187) and 47.5% females (N=171). 2 respondents preferred not to share their gender (0.6%). The division in age was present, ranging from an age of 18 till an age of 70. The most common ages were 30 (N = 24; 6.7%), 35 (N = 23; 6.4%) and 24 (N = 22; 6.1%). The ages of 25, 27 and 29 were also present (all with N = 17). A number of 24 different nationalities represented the experiment. The most common nationalities were Indian (29.4%, N = 106) and American (23.9%, N = 86). This is consistent with the distribution of the survey, since the main nationalities of the users of Amazon Turk are Indian and Americans (Ipeirotis, 2010). The average duration time was 289.72 seconds, which is equal to approximately 5 minutes. All respondents were randomly assigned to either one of the conditions, the treatment group or the control group. 183 respondents were part of the control group, where 177 respondents were part of the treatment group. Gender and age were equally distributed between these conditions, according to Pearson's Chi-Square ($X2\_gender = 2.656$, $p = 0.265$; $X2\_age = 47.398$, $p = 0.578$). The descriptive statistics can be found in Appendix B1, 2 and 3.

4.2 Reliability Analysis

A reliability analysis is necessary to check the internal consistency of the variables. The Chronbach's alpha is the measure for this analysis. A high Chronbach's alpha means multiple questions represent the same thing, e.g. ask the same. If this is the case, the scales can be combined into one alternative scale. If the Chronbach's alpha is low, there are not enough questions asked to add them together. The rule of thumb for interpreting the Chronbach's alpha is as follows: excellent when > 0.9, good when 0.9 < alpha < 0.8, acceptable when 0.8 < alpha < 0.7, questionable when 0.7 < alpha < 0.6, poor when 0.6 < alpha < 0.5 and unacceptable when 0.5 < alpha. The results of the reliability analyses can be found in Appendix B4. Starting with the dependent variables, attitude towards the ad, attitude towards the brand and purchase intention respectively have an alpha of 0.930, 0.940 and 0.935. All these values are accepted as excellent values, so, for all three variables separately, the responses of the questions can be combined into one alternative scale. The manipulation variable, perceived personalization, had an alpha of 0.865 and was therefore also averaged into one scale. The independent variable using multiple questions, preference certainty, has an alpha of 0.566. This value is called poor, and therefore there was decided not to combine these questions into one scale. The control variables, general interest and privacy concern, respectively had an alpha of 0.754 and 0.903. Therefore, for these two variables separately, the responses are also averaged into one scale. The variable Preference Extremity is not included in the factor analyses, since this is not a variable that consists of multiple questions that need to be combined.

4.3 Factor Analysis

To combine the separate questions for each variable into one variable, factor analysis has to be done. For all relevant variables, except preference certainty, only one factor needed to be conducted. All factor analyses can be found in Appendix C. So, for example, for Attitude towards the message, all four questions were averaged into one scale variable. This is repeated for the variables Attitude towards the brand, Purchase Intention, Perceived Personalization, General Interest and Privacy Concern. For the variable Preference Certainty, two factors needed to be conducted. According to Tabachnick and Fidell (2014), the impact of a variable on a factor should be at least 0.32. Question 4 is deleted from the factor analysis, since it relied on both factors.

So, in this case, Factor1 will consist of the mean of question 2 and 3 whereas Factor2 will consist of only question 1. In Appendix C7 there can be seen that Factor1 and Factor2 respectively have a mean of 3.58 and 5.57. These factors are used for the regressions regarding preference certainty. The variable Preference Extremity is not included in the factor analyses, since this is not a variable that consists of multiple questions that need to be combined.

4.3 Manipulation Check

The next step is to perform an analysis for the manipulation of the experiment. This is to test whether there is a significant difference in perceived personalization between the treatment group and the control group. To check the distribution of the data, a Kolgomorov-Smirnov test is run. The test shows there is no normal distribution in the model ($p = .000$). Since the Kolgomorov-Smirnov test says there is no normal distribution, another test has to be run that does not require normal distribution. This is the Kruskal-Wallis test. This test shows an insignificant effect ($p = .073$). Both outputs can be found in Appendix D1. So, after using both tests, normal distribution has to be rejected. But, when looking at the Q-Q plots of the variables, a quite normal distribution shows, since all points are fairly close to the regression line. This will be explained in the next section, *Assumption testing*.

To see the manipulation effect, a t-test is executed. The results can be found in Appendix D2. Since the significance of Levene's test is .003, which is below .05, the null hypothesis about equal variances has to be rejected. This means the variances of both groups are not equal. That is why for interpreting the output of the t-test, the bottom row should be looked at. The p-value is below .05, which means the t -value is significant ($t(350) = -2.180$, $p = .030$). This means the null hypothesis of the t-test needs to be rejected and there can be assumed that there are significant differences in the means between the two groups. The mean of perceived personalization for the control group is 4.530, whereas the mean of perceived personalization for the treatment group is 4.862. Therefore, the manipulation test is successful.

4.4 Assumption Testing

To see whether the regression models can be interpreted, the data needs to be analyzed.

There needs to be looked at the distribution of the data. To see if the data was distributed normally, Q-Q plots and histograms were analyzed. The histograms and Q-Q plots for the dependent variables can be found in Appendix E1-E4. These graphs all show a reasonable normal distribution, since all points stay close to the diagonal lines. To actually test the

distribution, Kolgomorov-Smirnov tests were executed for all dependent variables (Appendix E5). These results show that all dependent variables do not follow a normal distribution (p = .000). However, all ANOVA analyses and regression analyses show significant results, and the Q-Q plots all show reasonable normal distributions. This is why the problem of the non-normal distribution for the dependent variables does not have to be taken that seriously.

To check for multivariate distributions, the skewness and kurtosis of the dependent variables were checked (Appendix E6). The skewness and kurtosis of the variables need to lie between -2 and 2 to make sure there are no normality issues (George & Mallery, 2010). Here, the skewness of the variables varies between -1.071 and -0.519 and the kurtosis varies between -0.381 and 0.943. That is why there can be said that there are no normality issues.

To check for multicollinearity in the data, all regressions are included with the VIF-score. These scores can be found in Appendix E7. The score implies that there is no multicollinearity between the variables if the value is between 1 and 10. For almost all independent variables, the VIF-score lies above 10. This, however, is not a problem in this experiment, since the goal of this experiment is to test moderating effects (Kromrey & Foster-Johnson, 1998). So, that is why the multicollinearity testing can be ignored for the rest of the analyses.

4.5 Hypotheses Testing

4.5.1 Personalized message on Perceived Personalization

The first hypothesis is already answered with the manipulation check. The regression output can be found in Appendix F1. The output gives a positive coefficient of .406 for the independent variable Group, with a significance of p = .003. The Group variable is a dummy variable, where 0 is the control group and 1 the treatment group. So, the output says that the treatment group has a higher perceived personalization of .406, compared to the control group. Therefore, there can be said that a personalized message has a positive impact on the perceived personalization of the respondents. So, the first hypothesis is confirmed.

4.5.2 Perceived Personalization on Attitude towards the message

Since the reliability analysis for attitude towards the message resulted in a Cronbach's alpha of 0.930, the 4 questions regarding attitude towards the message are averaged into one variable. To answer this hypothesis, a linear regression is executed. The following formula explains how this regression is run:

$$Attitude\ towards\ the\ message\ =\ Constant\ +\ \beta_1\ *\ Perceived\ Personalization\ +\ \varepsilon$$

The results of the regression can be found in Appendix F2. The regression results implicates that the overall model is significant (F(3,356) = 82.051; p = .000). Furthermore, the output says that the coefficient for perceived personalization has a significant effect on attitude towards the message (B = .526, p = .000). This means that for an increase of 1 in perceived personalization, the attitude towards the message increases with .526. Therefore, hypothesis 2a indicating that perceived personalization leads to a higher attitude towards the message is confirmed. The output also gives an R^2 of .409. This means that the variable perceived personalization explains 40.9% of the variation in the variable attitude towards the message. This is not a very high percentage, but since this study evaluates human behavior and human behavior is hard to predict, it is no problem.

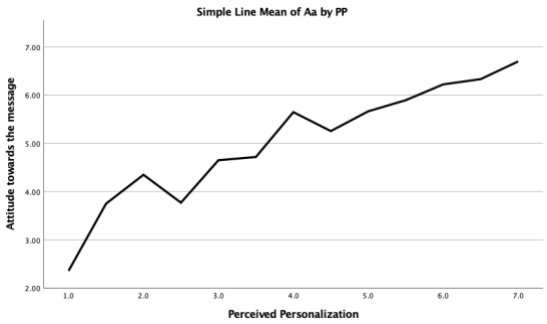

Figure 2: Effect of Perceived Personalization on Attitude towards the message

4.5.3 Perceived Personalization on Attitude towards the brand

Hypothesis 2b, stating that perceived personalization leads to a higher attitude towards the brand, is tested with a linear regression. Since the variable attitude towards the brand indicated a Cronbach's alpha of .940, the 4 questions that were used to measure attitude towards the brand were summarized into one variable. The following formula explains the regression:

$$Attitude\ towards\ the\ brand\ =\ Constant\ +\ \beta_1\ *\ Perceived\ Personalization\ +\ \varepsilon$$

The output of the regression can be found in Appendix F3. The output gives a significant model (F(3, 356) = 65.161; p = .000). Perceived personalization gives a positive, significant effect (B = .509, p = .000). This means that an increase of 1 for perceived personalization leads to an increase of .509 for attitude towards the brand. The output also gives an R^2 of .354, saying that perceived personalization explains 35.4% of the variation in attitude towards the brand. So, the

hypothesis, stating that perceived personalization leads to a higher attitude towards the brand, is confirmed.

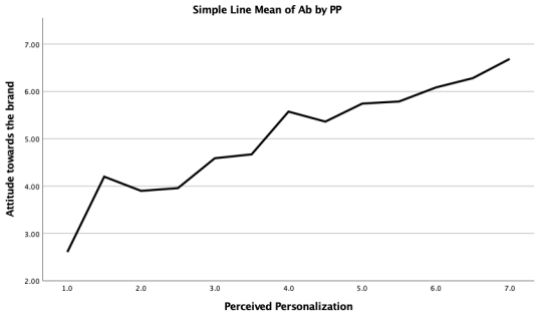

Figure 3: Effect of Perceived Personalization on Attitude towards the brand

4.5.4 Perceived Personalization on Purchase Intention

The next hypothesis that is tested is hypothesis 2c, stating that perceived personalization leads to a higher purchase intention. The variable purchase intention was measured with two questions. These questions are combined into one variable, since the reliability analysis gave a Cronbach's alpha of .935. The formula that explains the regressions is as follows:

$$Purchase\ Intention\ =\ Constant\ +\ \beta_1\ *\ Perceived\ Personalization\ +\ \varepsilon$$

The output gives a significant effect of perceived personalization on purchase intention ($F(3, 356) = 102.447$; $p = .000$). This means that an increase of 1 for perceived personalization leads to an increase of .584 in purchase intention (Appendix F4). The output gives an R^2 of .463, meaning that perceived personalization explains 46.3% of the variation in purchase intention. So, this hypothesis is also confirmed.

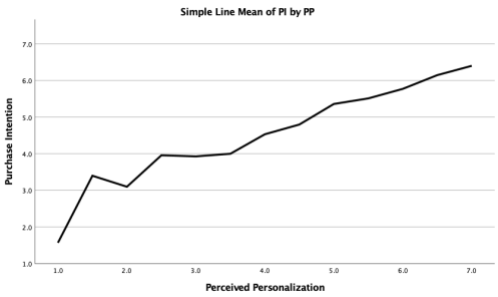

Figure 4: Effect of Perceived Personalization on Purchase Intention

4.5.5 Moderator Preference Extremity

For the next three hypotheses, preference extremity was used as a moderator. The variable was measured in the experiment with one question for each meal, where the respondents needed to state their opinion about the meal on a score of 0 to 100. To measure their extremity, the lowest score was subtracted from the highest score. After this, the mean of preference extremity was determined at a score of 62.73. The respondents were divided into two groups. If they had an extremity score above 62.73, they were labeled as extreme, and if they had an extremity score below 62.73, they were labeled as not extreme. Then, a regression was executed using three independent variables, namely the extremity groups that either gave a 0 or a 1, the perceived personalization variable and an interaction term including perceived personalization and preference extremity.

4.5.5.1 Attitude towards the message

In the first hypothesis, the effect of preference extremity will be tested on attitude towards the message. An interaction term between perceived personalization and preference extremity is included, to figure out their joint effect.

$$\begin{aligned} &Attitude\ towards\ the\ message \\ &\quad = Constant + \beta 1 * Perceived\ Personalization + \beta 2 \\ &\quad + Preference\ Extremity + \beta 3 * Perceived\ Personalization \\ &\quad * Preference\ Extremity + \varepsilon \end{aligned}$$

The output of the regression can be found in Appendix F5. If all coefficients are significant, the model would be as follows:

Respondents with preference extremity:

$$Attitude\ towards\ the\ message = 2.465 + 0.575 * Perceived\ Personalization$$

Respondents with no preference extremity:

$$Attitude\ towards\ the\ message = 2.799 + 0.461 * Perceived\ Personalization$$

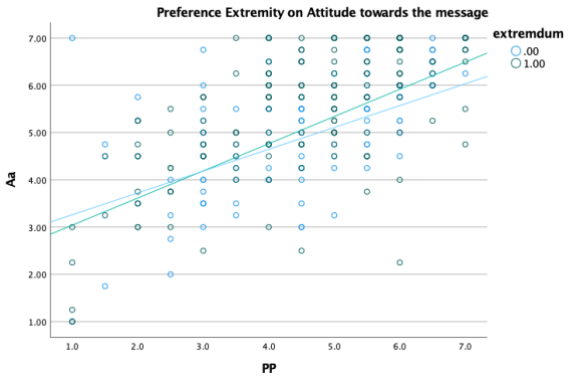

Figure 5: Effect of Perceived Personalization on Attitude towards the message with Preference Extremity

The results of the model show an overall significant effect (F(5, 354) = 51.082; p = .000). On the one hand, the effect of perceived personalization is positive and significant (B1 = .461; p = .000). On the other hand, the coefficients for preference extremity and the interaction term show a non-significant effect (respectively p = .344 and p = .115). Therefore, the hypothesis cannot be confirmed.

4.5.5.2 Attitude towards the brand

To answer the hypothesis that states that the effect of perceived personalization on attitude towards the brand is higher for people with high preference extremity, a regression is run. The variables perceived personalization, preference extremity and an interaction term between those two are added.

$$Attitude\ towards\ the\ brand = Constant + \beta 1 * Perceived\ Personalization + \beta 2 * Preference\ Extremity + \beta 3 * Perceived\ Personalization * Preference\ Extremity + \varepsilon$$

The results of this regression can be found in Appendix F6. The results give the following model:

Respondents with preference extremity:

$$Attitude\ towards\ the\ brand = 2.385 + 0.563 * Perceived\ Personalization$$

Respondents with no preference extremity:

$$Attitude\ towards\ the\ brand = 2.928 + 0.431 * Perceived\ Personalization$$

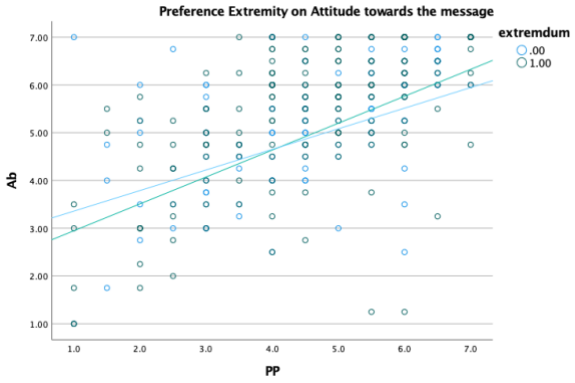

Figure 6: Effect of Perceived Personalization on Attitude towards the brand with Preference Extremity

Again, the overall model is significant (F(5, 354) = 39.905; p = .000). Also, again, the effect of perceived personalization on attitude towards the brand is positive and significant (B1 = .431; p = .000). However, the coefficients of preference extremity and the interaction term are not significant (respectively p = .160 and p = .093). Therefore, the hypothesis is not confirmed.

4.5.5.3 Purchase Intention

This hypothesis states that the effect of perceived personalization on purchase intention is higher for individuals with high preference extremity. The hypothesis will be answered with the help of a regression analysis. The used variables will be preference extremity, perceived personalization and an interaction term.

$$Purchase\ Intention = Constant + \beta 1 * Perceived\ Personalization + \beta 2 * Preference\ Extremity + \beta 3 * Perceived\ Personalization * Preference\ Extremity + \varepsilon$$

The results of the regression can be found in Appendix F7. The model created out of the results is:

Respondents with preference extremity:

$$Purchase\ Intention = 0.938 + 0.572 * Perceived\ Personalization$$

Respondents without preference extremity:

$$Purchase\ Intention = 0.751 + 0.605 * Perceived\ Personalization$$

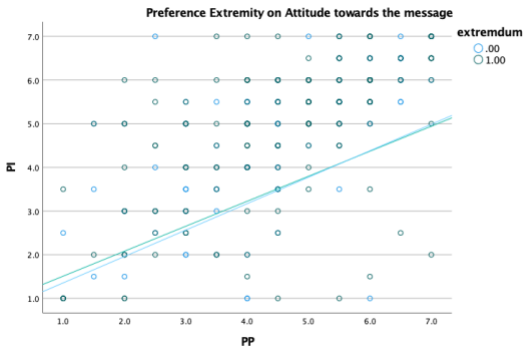

Figure 7: Effect of Perceived Personalization on Purchase Intention with Preference Extremity

Again, to start with the overall model, a significant effect is found (F(5, 354) = 61.352; p = .000). The effect of perceived personalization is also significant and positive (B1 = .605; p = .000). However, the coefficient for the effect of preference extremity on purchase intention is not significant (p = .560). The coefficient for the interaction term is also not significant (p = .684). So, again, the hypothesis is not confirmed.

4.5.6 Moderator Preference Certainty

For the next three hypotheses, the variable preference certainty is used. The variable was measured using four questions in the experiment, asking how certain the respondents think about their own preferences. The Cronbach's alpha for these four questions was .566, which is on the edge of poor. After running a factor analysis on these four questions, two factors were used to combine these questions. In the output can be seen that for these hypotheses, two factors and two interaction terms of the factors with Perceived Personalization were used. These are called PP*Factor1 and PP*Factor2.

All four questions regarding preference certainty were measured on a 7-point Likert scale. 3 of them were reverse coded, and therefore the output of these 3 was reversed to make sure the scale of all four questions was equal. The answers to these questions refer to the certainty respondents have about their preferences. So, each answer means the higher the score, the

more certain the respondent is about his/her preferences. Therefore, the factors display a score that indicates the preference certainty of a respondent. The interaction terms regarding the factors and the perceived personalization of the respondent therefore also mean the higher the score, the more certain a respondent is about his/her preferences.

4.5.6.1 Attitude towards the message

The first hypothesis, stating that the effect of perceived personalization on attitude towards the message is higher for individuals with high preference certainty, was tested with the two factors regarding preference certainty as a moderator.

$$Attitude\ towards\ the\ message = Constant + \beta 1 * Perceived\ Personalization + \beta 2 * Factor1 + \beta 3 * Factor2 + \beta 4 * PP * Factor1 + \beta 5 * PP * Factor2 + e$$

The overall model is significant (F(5, 354) = 58.322; p = .000). The results of the regression can be found in Appendix F8. The effect of perceived personalization on attitude towards the message is insignificant (β1 = -0.352, p = 0.067). The coefficient of Factor1 and the coefficient of the interaction term of Factor 1 are also insignificant (β2 = -0.132, p = .252, β4 = 0.045, p = 0.055). However, the coefficients of Factor 2 and the interaction terms are all significant (β3 = -0.433, p = 0.000; β5 = 0.128, p = 0.000).

$$Attitude\ towards\ the\ message = 5.929 - 0.433 * Factor2 + 0.128 * PP * Factor2$$

The formula indicates that Factor 2 has a negative effect on attitude towards the message. This means preference certainty has a negative effect on attitude towards the message. However, the interaction term indicates a positive effect on attitude towards the message. So, when looking at the overall formula, there can be said that the higher the preference certainty of a respondent, the higher the effect on attitude towards the message. Since the interaction term increaser faster than Factor 2, the positive effect is seen as a stronger effect than the negative effect of Factor 2. So, the model is interpretated as the higher a respondents' preference certainty, the higher the attitude towards the message. Therefore, the hypothesis is confirmed.

4.5.6.2 Attitude towards the brand

The next hypothesis states that the effect of perceived personalization increases for respondents with preference certainty. A regression with the two factors regarding preference certainty and perceived personalization on attitude towards the brand was run, including interaction terms of the preference certainty factors with perceived personalization.

$$Attitude\ towards\ the\ brand = Constant + \beta 1 * Perceived\ Personalization + \beta 2 * Factor1 + \beta 3 * Factor2 + \beta 4 * PP * Factor1 + \beta 5 * PP * Factor2 + e$$

The results of the regression can be found in Appendix F9. The overall model can be defined as significant ($F(5, 354) = 47.352$; $p = 0.000$). The coefficient for Factor1 and the coefficient for the interaction term of Factor1 and perceived personalization are insignificant ($\beta 2 = -0.158$, $p = 0.210$, $\beta 4 = 0.044$, $p = 0.080$). All other coefficients are significant. Therefore, those coefficients influence the effect of perceived personalization on attitude towards the brand. The following formula summarizes the significant coefficients:

$$Attitude\ towards\ the\ brand = 6.249 - 0.448 * Perceived\ Personalization - 0.454 * Factor2 + 0.139 * PP * Factor2$$

So, perceived personalization, as well as Factor2, both have a negative effect on Attitude towards the brand. However, the interaction term has a positive effect. When comparing a low score for preference certainty, determined in Factor2, with a high score for preference certainty, the positive effect of the interaction term weighs stronger than the negative effect of the other coefficients. More clearly, respondents with high preference certainty have a higher attitude towards the brand than respondents with low preference certainty. So, this hypothesis is confirmed.

4.5.6.3 Purchase Intention

The third hypothesis regarding preference certainty states that the purchase intention for respondents who have certain preferences is higher than for respondents who have uncertain preferences.

$$Purchase\ Intention = Constant + \beta 1 * Perceived\ Personalization + \beta 2 * Factor1 + \beta 3 * Factor2 + \beta 4 * PP * Factor1 + \beta 5 * PP * Factor2 + e$$

The results can be found in Appendix F10. The overall model shows a significant effect (F(5, 354) = 62.765, p = .000). The coefficient for Perceived Personalization is, again, insignificant, as well as Factor2 (β1 = -0.264, p = 0.233, β3 = -0.258, p = 0.067). The rest of the coefficients are significant, which leads to the following formula:

$$Purchase\ Intention = 4.985 - 0.328 * Factor1 + 0.053 * PP * Factor1 + 0.112 * PP * Factor\ 2$$

The coefficient of Factor1 implicates a negative effect on Purchase Intention. But, since the effects of both interaction terms give positive coefficients, and there was established that the interaction terms give a heavier effect on the dependent variable, there can be said that there is a positive effect. So, respondents with high preference certainty have a higher purchase intention than respondents with low preference certainty. So, again, this hypothesis is confirmed.

5. Discussion

In this part of the study, the results are discussed.

The aim of this study was to see the effect of preference characteristics of customers on the effect of personalization on three variables, namely attitude towards the message, attitude towards the brand and purchase intention.
The first result of this study is that a personalized message influences customers' perceived personalization. This means that customers who receive a personalized message perceive this as more personalized, whereas customers who receive a general message perceive this as less personalized. This result was in line with the expectation, and also in line with previous literature (Li et al., 2018).

The second result of this study was the effect of perceived personalization on the three dependent variables. For all three dependent variables, a significant effect is found for perceived personalization. Therefore, there can be said that perceived personalization influences the attitude towards the message, attitude towards the brand and the purchase intention for customers. This means that when customers perceive a message as personalized, both their attitude as their purchase intention increases. This is in line with the main goal of personalization. This study supports preliminary studies in this subject, where also a positive effect of personalization on these variables was found (Li et al., 2018).

The third part of the results of this study, was the moderating effect of preference extremity on the effect of personalization on the dependent variables. All hypotheses regarding this relationship were rejected due to insignificant coefficients. In more detail, no moderating effect of preference extremity was found on the relationship between personalization and attitude towards the message, attitude towards the brand and purchase intention. This result is not consistent with the findings of prior studies. For example, prior study shows a significant, negative effect of preference extremity. More specifically, they say that advertisements are more effective for customers with low preference extremity than for customers with high preference extremity (Li et al., 2018). They state that personalization effects are moderated by preference extremity.

Multiple things could have caused the insignificant effect of preference extremity.
One of the reasons could have been the number of options the respondents had to evaluate. In this study, the respondents had to grade seven different choices. This number was randomly chosen. There can be argued that this number is too small, since the choice of food when ordering online is infinite. There can also be argued that this number is too large, since consumers narrow down their choices quite quickly. Another reason why preference extremity turned out to be insignificant, can be the measuring of preference extremity. Using the highest scored grade and the lowest scored grade and subtracting them from each other, is a somewhat objective way of measuring a respondents' preference extremity.

The fourth part of the results show the output of the regressions regarding the moderating effect of preference certainty. The measurement of preference certainty consisted of four questions that were combined into two factors. The conclusion of all results regarding preference certainty is that respondents with certain preferences have a more positive attitude and purchase intention, compared to those with uncertain preferences.

Although the R^2 of the models is not of interest for the particular results of this study, they have been added to all models. The results show that all models show a relatively high R^2. This can be of concern, since this means a lot of variance is explained by the variables. In the part *Future Research* solutions are discussed.

6. Conclusion

With the rise of personalization in marketing, this concept is of high importance for current marketers. This research provides additional evidence in the literature regarding personalization. It researches the effect of personalization on consumers' attitude and purchase intention. The findings show that perceived personalization increases consumers' attitude towards the message, attitude towards the brand and their purchase intention. The findings also show a moderating effect of preference certainty. This means that when consumers have certain preferences, the personalization effect is higher in comparison with consumers who have uncertain preferences. For the moderating effect of preference extremity, no evidence was found.

6.1 Theoretical Implications

The concept of personalization is a frequently researched topic. However, the research regarding personalization is not in its finest time yet, and there are many topics where more research can help to conclude findings. Most research gives a positive effect of personalization on consumers' attitude and purchase intention. This research contributes in this area, with findings that implicate that perceived personalization for the consumer results in a more positive attitude and a higher purchase intention.

What makes this research different, is the contribution regarding preference circumstances of consumers. This study focuses on two situations regarding preferences, namely extremity and certainty. This study found a significant effect for preference certainty, and no significant effect for preference extremity. This differs from existing literature, since Li et al. (2018) found a significant effect for preference extremity. Regarding the insignificance of preference extremity, this is a problem that is able to be fixed, so this is an area where future research can focus on.

However, preference certainty is a subject that was not yet researched in combination with personalization. The conclusion of this study is that preference certainty has a positive moderating effect on personalization, and therefore this study gives contribution to existing literature.

6.2 Managerial Implications

The implication of the effect of personalization is useful for marketers. In this way, they can learn how to target their customers in a personalized way, and on what kind of customer the personalization has the best effect. This study gives a positive effect of a perceived personalized message on consumers' attitude and purchase intention. Marketers should use this information to target their customers with personalized messages to increase their attitudes and purchase intention. More clearly, marketers need to make sure the personalized message is seen as personalized by the consumer, to create the best possible result. Furthermore, this study says a perceived personalized message has more effect on consumers with certain preferences than on consumers with uncertain preferences. Therefore, marketers need to focus on targeting consumers with certain preferences.

6.3 Limitations and Future Research

The limitations of this research start with the demographics of the respondents. When looking at the nationality of all respondents, it is clear that most respondents are from countries where Amazon Turk is a popular platform, namely the United States and India. Since for every business, their target consumers differentiate, it is necessary for each business to focus on their own consumers. This research shows the effect of personalization in the area regarding ordering food, whereas businesses should perform this study in their own field. Future research can investigate if the results found here keep up when looking at a different field.

Keeping the attention on Amazon Turk leads to another limitation. Amazon Turk is known for its survey distribution, where participants receive a $0.05 reward for filling in the survey. Although unrealistic times were removed from the survey, it still cannot be said with certainty that all respondents completed the survey with their true feelings. Future research can focus on generating organic survey answers, to see if this differentiates from distributing the survey on a paid platform.

Also, since all respondents knew they were filling in a survey instead of actually ordering food, this could have led to other answers than when respondents really were looking for food to order. However, this limitation cannot easily be fixed, since a survey needs to be filled in to find out the feelings of the consumers.

Another point is the use of preference certainty and preference extremity. This is not seen as a limitation, since both concepts are well measured. But, for future research, more characteristics regarding consumers' preferences can be investigated to see any additional relationship.
Next, the output of this research has implemented the feelings of the respondents, using questions they answered for themselves. This is fine for now, but if data from a company can be used, that is highly recommended. When using data from a company, the respondents do not have to fill in their own feelings regarding personalization, but the data will show their decisions. Since the respondents then are not aware of their click-throughs being used for a personalization research, they will react more organically. Future research, conducted by writers who have access to this kind of data, can be useful to see if there are differences in the output.

Another point of concern is the highly measured R^2 of the models. This can be of concern, since this means a lot of variance is explained by the variables. One of the reasons can be the design of the experiment. Respondents could have guessed the purpose of the experiment and therefore have intentionally answered questions in a certain way that could have let the R^2 increase. This can be fixed by changing the design of the experiment and focusing more on keeping the respondents in the dark about the purpose of the experiment.

As last, regarding the possible reasons why preference extremity turned out to be insignificant, future research can also try and fix this. Future research could use a different number of choice options, to see if the number used in this study was too few, good or too many, and to see if the number of choices influences respondents' preference extremity. Regarding the measurement of preference extremity, future research can find a different way to measure this concept and see if this influences the results of the study.

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Appendix A: Survey and Website Design

1. Survey design

Hello! In this survey, you will answer questions and you are part of an experiment regarding ordering meals to eat at home. Please answer the questions as truthfully as possible. The survey will approximately take 10 minutes. Thank you for participating!

Part 1: demographics + control variable general interest
Please indicate to what extend you agree with the following statements:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I am interested in ordering meals.	○	○	○	○	○	○	○
I frequently order meals.	○	○	○	○	○	○	○

What is your nationality? (e.g. Dutch)

What is your age? (in numbers, e.g. 25)

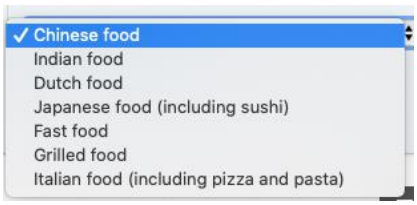
What is your gender?

- ○ Male
- ○ Female
- ○ Prefer not to say

What is your occupation?

- ○ Student
- ○ Full-time job
- ○ Part-time job
- ○ Unemployed
- ○ Other:

Part 2: Only shown to respondents in the treatment group:
Imagine you sit on the couch and you want to order in a meal. Consider the list below as all possible options. Which food would you most prefer?



Part 3: preference certainty
Please indicate to what extent you agree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I am certain about my preferences regarding ordering meals.	○	○	○	○	○	○	○
I find it difficult to divide my preferences between meals.	○	○	○	○	○	○	○
I feel like the choice would be easier if I knew deeper information about the different meals.	○	○	○	○	○	○	○
I think the number of choices influences my preference certainty.	○	○	○	○	○	○	○

Part 4: filler task

Part 5: redirection to website
In this part of the survey, you will be redirected to another webpage. Please browse the page and have a good look. You can take all the time you need. The webpage will open in a new window. After you had a good look, please return to this webpage and continue with the survey.

Treatment group: redirected to website with advertisement of their most preferred meal to order
Control group: redirected to website with advertisement of the two most commonly ordered meals

Part 6: attention check
Which meal was mentioned in the advertisement on the website?

- ☐ Chinese food
- ☐ Indian food
- ☐ Dutch food
- ☐ Japanese food
- ☐ Fast food
- ☐ Grilled food
- ☐ Italian food

Part 7: dependent variables
Please indicate your overall feelings about the advertisement that was shown on the website.

Bad	○ ○ ○ ○ ○ ○ ○	Good
Dislike	○ ○ ○ ○ ○ ○ ○	Like
Unfavorable	○ ○ ○ ○ ○ ○ ○	Favorable
Boring	○ ○ ○ ○ ○ ○ ○	Interesting

Please indicate your overall feelings about the website.

Bad	○ ○ ○ ○ ○ ○ ○	Good
Dislike	○ ○ ○ ○ ○ ○ ○	Like
Unfavorable	○ ○ ○ ○ ○ ○ ○	Favorable
Boring	○ ○ ○ ○ ○ ○ ○	Interesting

Please indicate to what extent you agree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I am likely to use the website.	○	○	○	○	○	○	○
I am likely to buy things from the website.	○	○	○	○	○	○	○

Please indicate to what extent you agree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The ad reflects my special characteristics.	○	○	○	○	○	○	○
The ad targets me as a unique individual.	○	○	○	○	○	○	○

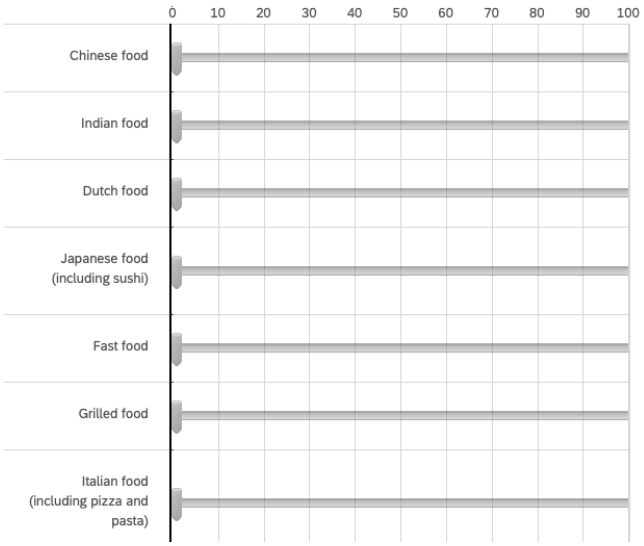
Part 8: control variable privacy concern

Please indicate to what extent you agree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I am sensitive about giving out information regarding my preferences.	○	○	○	○	○	○	○
I am concerned about anonymous information that is collected about me (anonymous information is information collected about me but it cannot be used to identify me).	○	○	○	○	○	○	○
I am concerned about how my personally un-identifiable information will be used by a brand (un-identifiable information is information I gave voluntarily which cannot be used to identify me as an individual, e.g. age, sex).	○	○	○	○	○	○	○
I am concerned about how my personally identifiable information will be used by a brand (personally identifiable information is information I gave voluntarily which can be used to identify me as an individual, e.g. name, adres).	○	○	○	○	○	○	○

Part 9: preference extremity

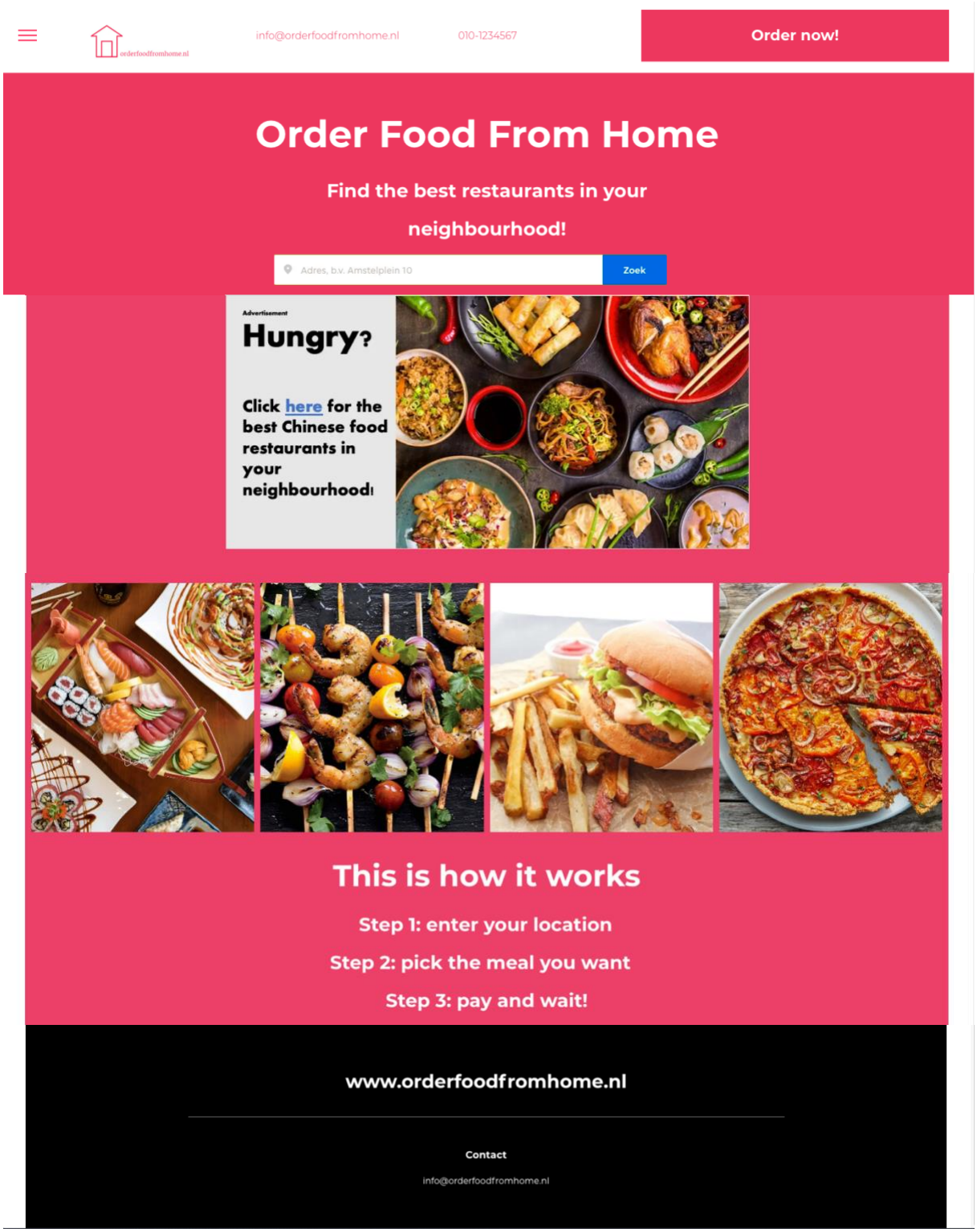
Please score all meals on a scale of 0-100 where 0 means “not interested at all” and 100 means “very interested.”



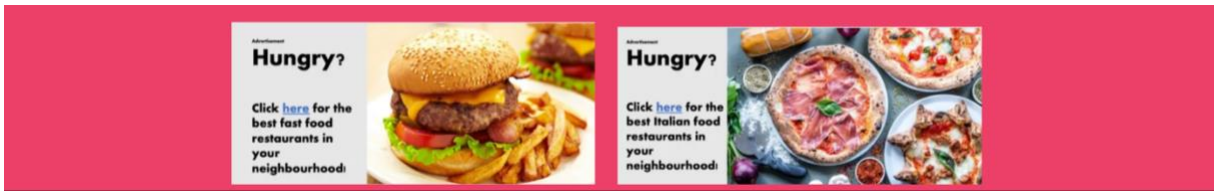
Part 10: the end

This is the end of the survey. Thank you for participating!

2. Website design orderfoodfromhome.nl with advertisement of Chinese food.

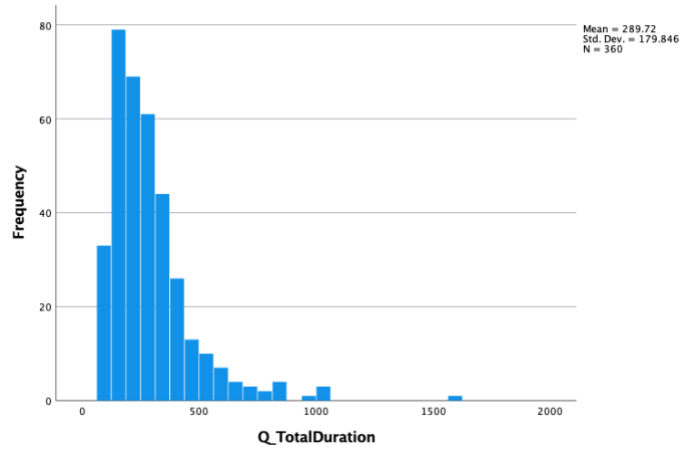


3. Example advertisement for control group



Appendix B: Descriptive Statistics

1. Total duration time



2. Demographics

Frequency table Gender

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	187	51.9	51.9	51.9
	Female	171	47.5	47.5	99.4
	Prefer not to say	2	.6	.6	100.0
	Total	360	100.0	100.0	

Frequency table Age

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<21	7	1.9	1.9	1.9
	21-30	148	41.1	41.1	43.0
	31-40	113	31.4	31.4	74.4
	41-50	51	14.2	14.2	88.6
	51-60	26	7.2	7.2	95.8
	>60	15	4.2	4.2	100.0
	Total	360	100.0	100.0	

Frequency table Nationality

Nationality

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	Dutch	35	9.7	9.7	9.7
	2	Indian	106	29.4	29.4	39.1
	3	Spanish	8	2.2	2.2	41.3
	4	English/Irish/British	18	5.0	5.0	46.3
	5	Turkish	1	.3	.3	46.5
	6	Vietnamese	2	.6	.6	47.1
	7	Brazilian	34	9.4	9.4	56.5
	8	American	86	23.9	23.9	80.4
	9	German	5	1.4	1.4	81.7
	10	Italian	32	8.9	8.9	90.6
	11	Pakistan	2	.6	.6	91.2
	12	Singapore	1	.3	.3	91.4
	13	Canadian	15	4.2	4.2	95.6
	14	French	4	1.1	1.1	96.7
	15	Macedonian	1	.3	.3	97.0
	16	Trinidadian	1	.3	.3	97.3
	17	Norwegian	1	.3	.3	97.6
	18	Australian	2	.6	.6	98.2
	19	Somalian	1	.3	.3	98.5
	20	Chinese	1	.3	.3	98.8
	21	Venezuelan	1	.3	.3	99.1
	22	Ecuadorian	1	.3	.3	99.4
	23	Philippian	1	.3	.3	99.7
	24	Belgian	1	.3	.3	100.0
	Total		360	100.0	100.0	

Frequency table Group

Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Control	183	50.8	50.8	50.8
	Treatment	177	49.2	49.2	100.0
	Total	360	100.0	100.0	

3. Pearson Chi-Square Cross Tabs

Age X Group

Group * Age Cross Tabulation

		Age						
		<21	21-30	31-40	41-50	51-60	>60	Total
Group	0	4	75	60	22	13	9	183
	1	3	73	54	29	13	6	177
	Total	7	148	114	51	26	15	360

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	47.398[a]	50	.578
Likelihood Ratio	55.741	50	.268
N of Valid Cases	360		

a. 7 cells (68.8%) have expected count less than 5. The minimum expected count is .49.

Gender X Group

Group * Gender Cross Tabulation

		Gender			
		Male	Female	Prefer not to say	Total
Group	0	92	91	0	183
	1	95	80	2	177
	Total	187	171	2	360

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.656[a]	2	.265
Likelihood Ratio	3.429	2	.180
Linear-by-Linear Association	.177	1	.674
N of Valid Cases	360		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .98.

4. Reliability Analysis

Attitude towards the message

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Aa_1	16.45	14.760	.820	.913
Aa_2	16.53	14.511	.871	.896
Aa_3	16.54	14.561	.870	.897
Aa_4	16.59	14.939	.781	.926

Reliability Statistics

Chronbach's Alpha	N of Items
.930	4

Attitude towards the brand

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Ab_1	16.38	15.985	.860	.921
Ab_2	16.43	15.454	.882	.914
Ab_3	16.43	15.855	.891	.911
Ab_4	16.42	16.433	.797	.940

Reliability Statistics

Chronbach's Alpha	N of Items
.940	4

Purchase intention

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PI_1	4.97	2.409	.878	.
PI_2	4.97	2.275	.878	.

Reliability Statistics

Chronbach's Alpha	N of Items
.935	2

Perceived personalization

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PP_1	4.62	2.604	.765	.
PP_2	4.77	2.196	.765	.

Reliability Statistics

Chronbach's Alpha	N of Items
.865	2

Preference certainty

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Certainty_1	14.06	12.361	.108	.650
Certainty_2	15.62	8.710	.325	.524
Certainty_3	14.79	8.225	.506	.354
Certainty_4	14.41	8.884	.494	.379

Reliability Statistics

Chronbach's Alpha	N of Items
.566	4

Control variable: General interest

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Interest_1	5.13	2.477	.613	.
Interest_2	5.66	1.790	.613	.

Reliability Statistics

Chronbach's Alpha	N of Items
.754	2

Control variable: Privacy concern

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Privacy_1	14.45	19.012	.731	.893
Privacy_2	14.39	18.044	.815	.863
Privacy_3	14.46	17.569	.844	.852
Privacy_4	14.09	18.955	.743	.889

Reliability Statistics

Chronbach's Alpha	N of Items
.903	4

Appendix C: Factor Analysis

1. Factor Analysis Attitude towards the message

Communalities

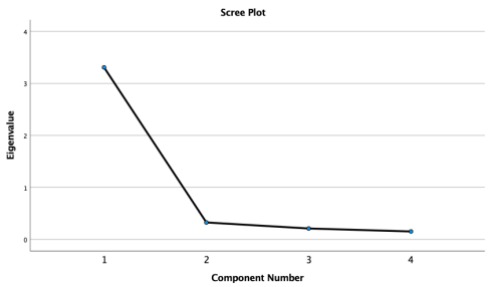
	Initial	Extraction
Attitudemessage1	1.000	.811
Attitudemessage2	1.000	.868
Attitudemessage3	1.000	.866
Attitudemessage4	1.000	.764

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues		
Component	Total	% of Variance	Cumulative %
1	3.308	82.697	82.697
2	.327	8.173	90.870
3	.211	5.284	96.154
4	.154	3.846	100.00

Extraction Method: Principal Component Analysis.



2. Factor Analysis Attitude towards the brand

Communalities

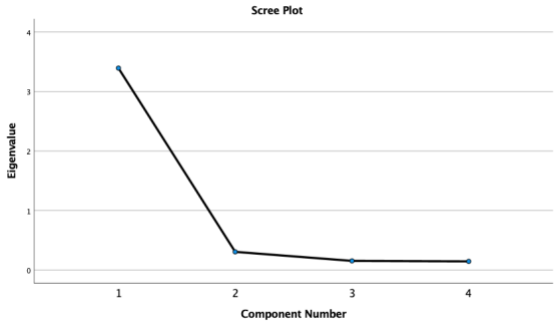
	Initial	Extraction
Attitudebrand1	1.000	.852
Attitudebrand2	1.000	.877
Attitudebrand3	1.000	.886
Attitudebrand4	1.000	.778

Extraction Method: Principal Component Analysis

Total Variance Explained

	Initial Eigenvalues		
Component	Total	% of Variance	Cumulative %
1	3.394	84.846	84.846
2	.306	7.652	92.498
3	.154	3.859	96.357
4	.146	3.643	100.000

Extraction Method: Principal Component Analysis.



3. Factor Analysis Purchase Intention

Communalities

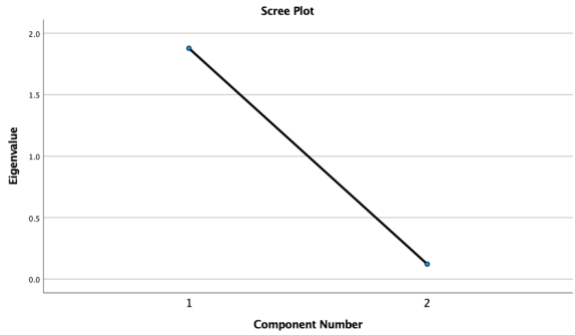
	Initial	Extraction
PurchaseIntention1	1.000	.939
PurchaseIntention2	1.000	.939

Extraction Method: Principal Component Analysis.

Initial Eigenvalues

Component	Total	% of Variance	Cumulative %
1	1.878	93.892	93.892
2	.122	6.108	100.000

Extraction Method: Principal Component Analysis.



4. Factor Analysis Perceived Personalization

Communalities

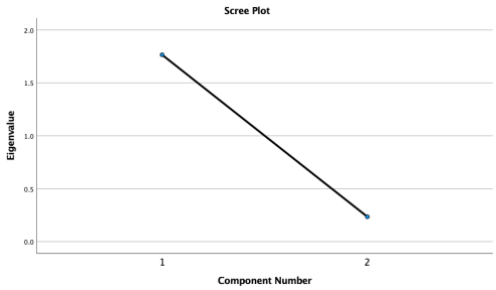
	Initial	Extraction
PerceivedPersonalization1	1.000	.883
PerceivedPersonalization2	1.000	.883

Extraction Method: Principal Component Analysis.

Total Variance Explained
Initial Eigenvalues

Component	Total	% of Variance	Cumulative %
1	1.765	88.266	88.266
2	.235	11.734	100.000

Extraction Method: Principal Component Analysis.



5. Factor Analysis Privacy Concern

Communalities

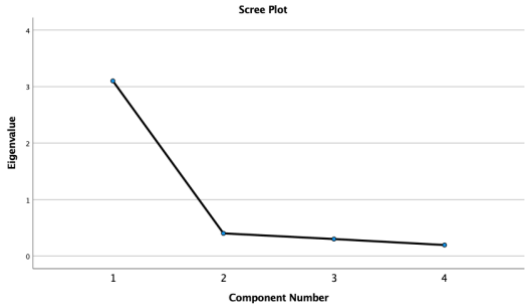
	Initial	Extraction
Privacy1	1.000	.715
Privacy2	1.000	.812
Privacy3	1.000	.845
Privacy4	1.000	.730

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues		
Component	Total	% of Variance	Cumulative %
1	3.102	77.539	77.539
2	.402	10.039	87.578
3	.301	7.535	95.113
4	.195	4.887	100.000

Extraction Method: Principal Component Analysis.



6. Factor Analysis General Interest

Communalities

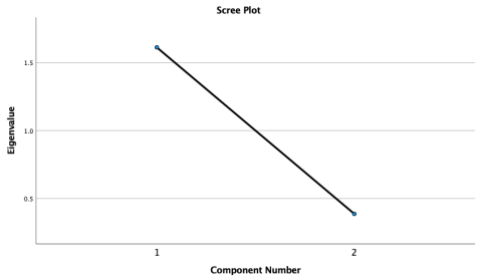
	Initial	Extraction
Interest1	1.000	.806
Interest2	1.000	.806

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Total	% of Variance	Cumulative %
1	1.613	80.638	80.638
2	.387	19.362	100.000

Extraction Method: Principal Component Analysis.



7. Factor Analysis Preference Certainty

Communalities

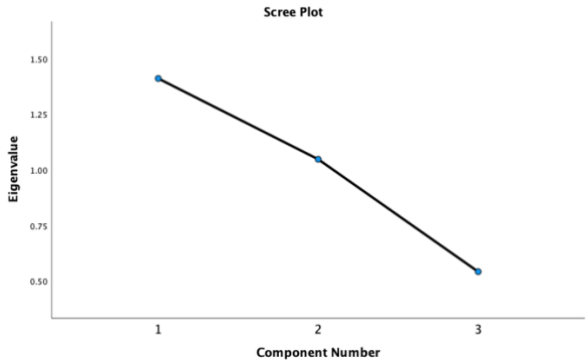
	Initial	Extraction
Certainty1	1.000	.944
Certainty2	1.000	.765
Certainty3	1.000	.749

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues		
Component	**Total**	**% of Variance**	**Cumulative %**
1	1.410	47.016	47.016
2	1.047	34.912	81.928
3	.542	18.072	100.000

Extraction Method: Principal Component Analysis.



Component Matrix[a]

	Component	
	1	2
Certainty1	-.131	.963
Certainty2	.817	.312
Certainty3	.852	-.151

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Rotated Component Matrix[a]

	Component	
	1	2
Certainty1	-.012	.972
Certainty2	.849	.209
Certainty3	.827	-.254

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Factor1	360	1.00	7.00	3.5764	1.33899
Factor2	360	1.00	7.00	5.5667	1.23595
Valid N (listwise)	360				

Appendix D: Manipulation Check

1. Manipulation check

Normality tests

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
Perceived Personalization	Control	.130	183	.000	.955	183	.000
	Treatment	.124	177	.000	.953	177	.000

a. Lilliefors Significance Correction

Independent-Samples Kruskal-Wallis Test Summary

Total N	360
Test Statistic	3.214[a,b]
Degree of Freedom	1
Asymptotic Sig. (2-sided test)	.073

a. The test statistic is adjusted for ties.
b. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

2. T-test Group on Perceived Personalization

Group Statistics

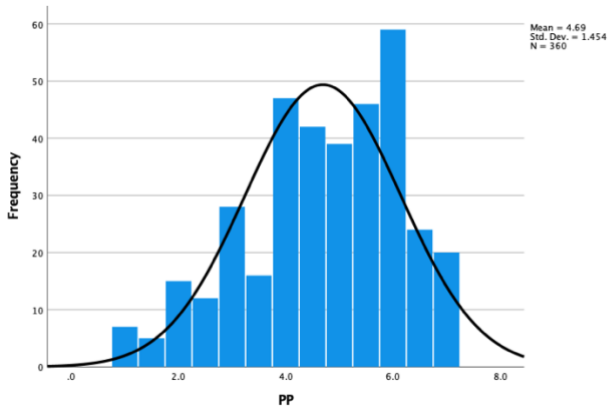
	Group	N	Mean	Std. Deviation	Std. Error Mean
Perceived Personalization	0	183	4.530	1.5734	.1163
	1	177	4.862	1.3031	.0979

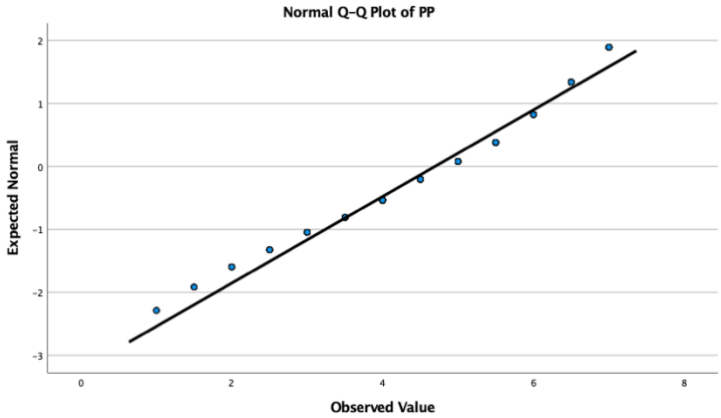
Independent Samples Test

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
PP	Equal variances assumed	8.771	.003	-2.173	358	.030	-.3315	.1525	-.6315	-.0316
	Equal variances not assumed			-2.180	349.764	.030	-.3315	.1521	-.6306	-.0325

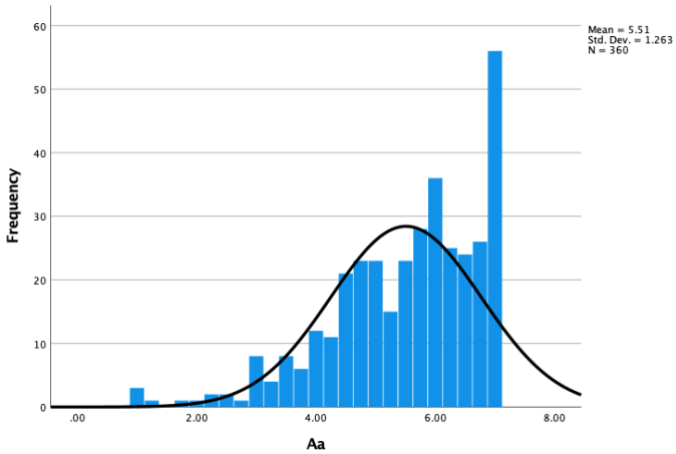
Appendix E: Assumption Tests

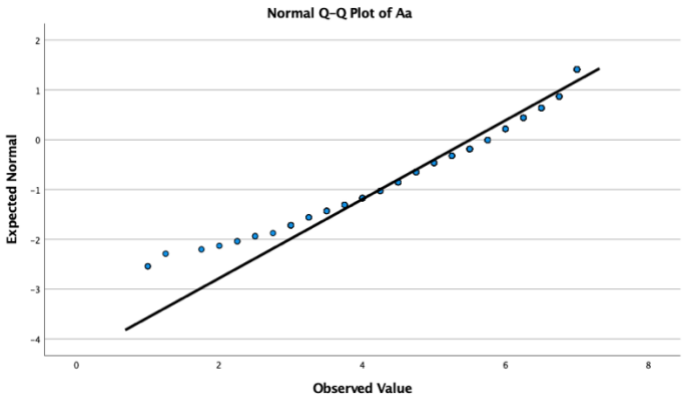
1. Q-Q plot and histogram Perceived Personalization



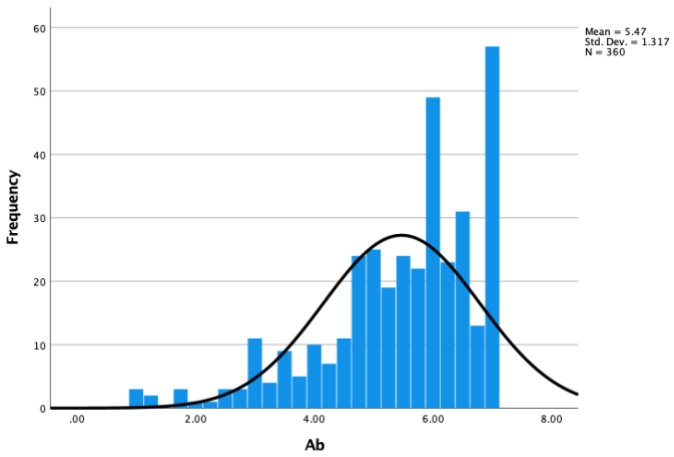


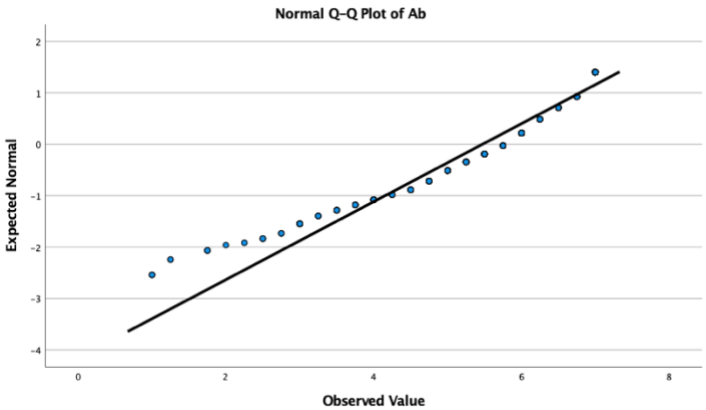
2. Q-Q plot and histogram Attitude towards the message



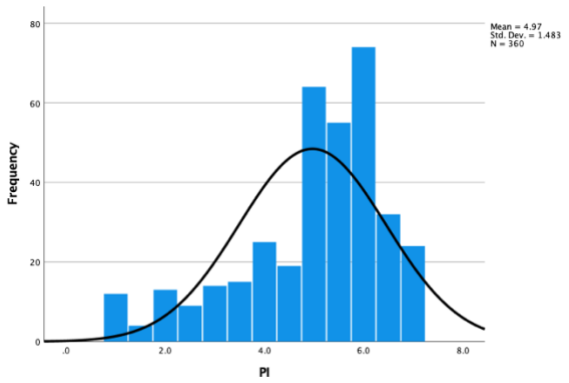


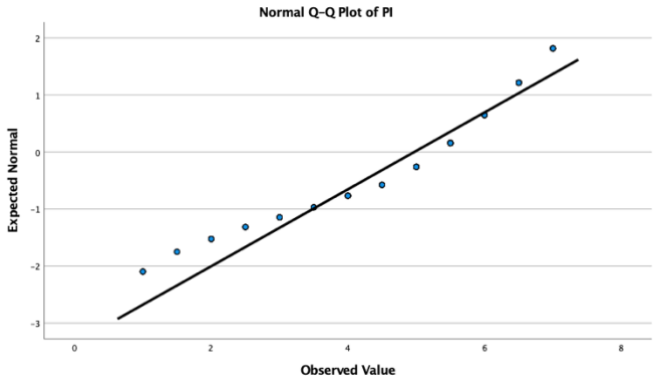
3. Q-Q plot and histogram Attitude towards the brand





4. Q-Q plot and histogram Purchase Intention





5. Normality tests dependent variables

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Perceived Personalization	.124	360	.000	.955	360	.000
Attitude towards the message	.119	360	.000	.918	360	.000
Attitude towards the brand	.137	360	.000	.905	360	.000
Purchase intention	.200	360	.000	.900	360	.000

a. Lilliefors Significance Correction

6. Skewness and kurtosis

Descriptives

	Skewness	Std. Error	Kurtosis	Std. Error
Perceived Personalization	-.519	.129	-.381	.256
Attitude towards the message	-.957	.129	.836	.256
Attitude towards the brand	-1.071	.129	.943	.256
Purchase intention	-1.004	.129	.421	.256

7. Multicollinearity tests

	Collinearity Statistics	
	Tolerance	**VIF**
Perceived Personalization	.027	36.979
Certainty1	.100	9.975
PP*Certainty1	.024	41.970
Certainty2	.066	15.267
PP*Certainty2	.040	25.126
Certainty3	.092	10.885
PP*Certainty3	.035	28.474
Certainty4	.085	11.711
PP*Certainty4	.026	38.514

	Collinearity Statistics	
	Tolerance	**VIF**
Perceived Personalization	.441	2.266
Extremity	.086	11.624
PP*Extremity	.080	12.558

Appendix F: Hypotheses Tests

1. Regression output Group on Perceived Personalization

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.456[a]	.208	.202	1.2995

a. Predictors: (Constant), Group, Interest, Privacy

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	158.134	3	52.711	31.213	.000[b]
	Residual	601.198	356	1.689		
	Total	759.333	359			

a. Dependent Variable: Perceived Personalization
b. Predictors: (Constant), Group, Interest, Privacy

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	Constant	1.302	.359		3.632	.000
	Group	.406	.137	.140	2.958	.003
	Interest	.340	.053	.305	6.381	.000
	Privacy	.284	.049	.275	5.758	.000

a. Dependent Variable: Perceived Personalization

2. Regression output Perceived Personalization on Attitude towards the message

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.639[a]	.409	.404	.97520

a. Predictors: (Constant), Perceived Personalization, Interest, Privacy

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	234.096	3	78.032	82.051	.000[b]
	Residual	338.563	356	.951		
	Total	572.658	359			

a. Dependent Variable: Attitude towards the message
b. Predictors: (Constant), Perceived Personalization, Interest, Privacy

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.678	.268		9.992	.000
	Perceived Personalization	.526	.039	.606	13.384	.000
	Interest	-.008	.042	-.008	-.183	.855
	Privacy	.085	.039	.094	2.186	.029

a. Dependent Variable: Attitude towards the message

3. Regression output Perceived Personalization on Attitude towards the brand

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.595[a]	.354	.349	1.06292

a. Predictors: (Constant), Perceived Personalization, Interest, Privacy

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	220.857	3	73.619	65.161	.000[b]
	Residual	402.212	356	1.130		
	Total	623.069	359			

a. Dependent Variable: Attitude towards the brand
b. Predictors: (Constant), Perceived Personalization, Interest, Privacy

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.686	.292		9.196	.000
	Perceived Personalization	.509	.043	.562	11.879	.000
	Interest	.003	.046	.003	.076	.939
	Privacy	.079	.042	.085	1.876	.061

a. Dependent Variable: Attitude towards the brand

4. Regression output Perceived Personalization on Purchase intention

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.681[a]	.463	.459	1.0907

a. Predictors: (Constant), Perceived Personalization, Interest, Privacy

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	365.639	3	121.880	102.447	.000[b]
	Residual	423.525	356	1.190		
	Total	789.164	359			

a. Dependent Variable: Purchase intention
b. Predictors: (Constant), Perceived Personalization, Interest, Privacy

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.874	.300		2.916	.004
	Perceived Personalization	.584	.044	.573	13.297	.000
	Interest	.248	.047	.219	5.302	.000
	Privacy	.003	.043	.003	.063	.950

a. Dependent Variable: Purchase intention

5. Regression output Preference Extremity on Attitude towards the message

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.647[a]	.419	.411	.96938

a. Predictors: (Constant), Perceived Personalization, Extremity, PP*Extremity, Interest, Privacy

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	240.006	5	48.001	51.082	.000[b]
	Residual	332.652	354	.940		
	Total	572.658	359			

a. Dependent Variable: Attitude towards the message
b. Predictors: (Constant), Perceived Personalization, Extremity, PP*Extremity, Interest, Privacy

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.799	.317		8.825	.000
	Perceived Personalization	.461	.058	.530	7.953	.000
	Extremity	-.334	.353	-.132	-.948	.344
	PP*Extremity	.114	.072	.230	1.582	.115
	Interest	.002	.042	.002	.042	.966
	Privacy	.091	.039	.102	2.361	.019

a. Dependent Variable: Attitude towards the message

6. Regression output Preference Extremity on Attitude towards the brand

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.600[a]	.360	.351	1.06096

a. Predictors: (Constant), Perceived Personalization, Extremity, PP*Extremity, Interest, Privacy

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	224.594	5	44.919	39.905	.000[b]
	Residual	398.475	354	1.126		
	Total	623.069	359			

a. Dependent Variable: Attitude towards the brand

b. Predictors: (Constant), Perceived Personalization, Extremity, PP*Extremity, Interest, Privacy

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.928	.347		8.433	.000
	Perceived Personalization	.431	.063	.476	6.798	.000
	Extremity	-.543	.386	-.206	-1.407	.160
	PP*Extremity	.132	.079	.257	1.683	.093
	Interest	.012	.046	.012	.268	.789
	Privacy	.087	.042	.093	2.062	.040

a. Dependent Variable: Attitude towards the brand

7. Regression output Preference Extremity on Purchase Intention

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.681[a]	.464	.457	1.0929

a. Predictors: (Constant), Perceived Personalization, Extremity, PP*Extremity, Interest, Privacy

b.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	366.371	5	73.274	61.352	.000[b]
	Residual	422.793	354	1.194		
	Total	789.164	359			

a. Dependent Variable: Purchase Intention

b. Predictors: (Constant), Perceived Personalization, Extremity, PP*Extremity, Interest, Privacy

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	.751	.358		2.100	.036
	Perceived Personalization	.605	.065	.593	9.265	.000
	Extremity	.232	.398	.078	.584	.560
	PP*Extremity	-.033	.081	-.057	-.407	.684
	Interest	.248	.047	.219	5.244	.000
	Privacy	.000	.044	.000	.011	.991

a. Dependent Variable: Purchase Intention

8. Regression output Preference Certainty on Attitude on the message

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.672[a]	.452	.444	.94181

a. Predictors: Constant, Perceived Personalization, Factor1, Factor2, Perceived Personalization * Factor1, Perceived Personalization * Factor2

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	258.659	5	51.732	58.322	.000[b]
	Residual	313.999	354	.887		
	Total	572.658	359			

a. Dependent Variable: Attitude towards the message

b. Predictors: Constant, Perceived Personalization, Factor1, Factor2, Perceived Personalization * Factor1, Perceived Personalization * Factor2

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	Constant	5.929	.852		6.957	.000
	Perceived Personalization	-.352	.191	-.405	-1.837	.067
	Factor1	-.132	.115	-.140	-1.148	.252
	Factor2	-.433	.122	-.424	-3.565	.000
	PP*Factor1	.045	.023	.236	1.923	.055
	PP*Factor2	.128	.028	1.114	4.538	.000

a. Dependent Variable: Attitude towards the message

9. Regression output Preference Certainty on Attitude towards the brand

Model Summary

Model	R	R Squared	Adjusted R Square	Std. Error of the Estimate
1	.633[a]	.401	.392	1.02698

a. Predictors: Constant, Factor1, Factor2, PP*Factor1, PP*Factor2

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	249.709	5	49.942	47.352	.000[b]
	Residual	373.360	354	1.055		
	Total	623.069	359			

a. Dependent Variable: Attitude towards the brand
b. Predictors: Constant, Perceived Personalization, Factor1, Factor2, PP*Factor1, PP*Factor2

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	Constant	6.249	.929		6.724	.000
	Perceived Personalization	-.448	.209	-.494	-2.144	.033
	Factor1	-.158	.126	-.160	-1.256	.210
	Factor2	-.454	.133	-.426	-3.425	.000
	PP*Factor1	.044	.025	.226	1.758	.080
	PP*Factor2	.139	.031	1.162	4.529	.000

a. Dependent Variable: Attitude towards the brand

10. Regression output Preference Certainty on Purchase Intention

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.686[a]	.470	.462	1.0871

a. Predictors: Constant, Perceived Personalization, Factor1, Factor2, PP*Factor1. PP*Factor2

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	370.845	5	74.169	62.765	.000[b]
	Residual	418.319	354	1.182		
	Total	789.164	359			

a. Dependent Variable: Purchase Intention
b. Predictors: Constant, Perceived Personalization, Factor1, Factor2, PP*Factor1, PP*Factor2

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	Constant	4.985	.984		5.067	.000
	Perceived Personalization	-.264	.221	-.259	-1.196	.233
	Factor1	-.328	.133	-.297	-2.468	.014
	Factor2	-.258	.140	-.215	-1.837	.067
	PP*Factor1	.053	.027	.241	1.997	.047
	PP*Factor2	.112	.033	.831	3.443	.000

a. Dependent Variable: Purchase Intention