The influence of gender stereotyping in advertising on brand equity

MSc BA Thesis NMC

Nina Hommels

S2606518

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Primary supervisor:

Dr. Agata Leszkiewicz

Secondary supervisor:

Dr. Efthymios Constantinides

External supervisor:

Dr. Ingrid Nieuwenhuis (Alpha One)

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1. Abstract

Gender stereotyping can have harmful effects on women, children and society as a whole. However, even to this day it is often used as an advertising trope. In this research we analyze if gender stereotypes in advertisement can have a negative effect on brand equity. Brand equity is the measure of value a consumer, in this case, places on a branded item over an unbranded item. It can be measured in a variety of techniques and concepts, which we discuss in the critical review. From this we concluded that empirical analysis is used most often and that price premiums are a comprehensive method to measure brand equity.

In the empirical section of this research we use discrete choice tasks with different brands of pilsner beer at different price points to measure the willingness to pay of respondents after watching an advertisement. Two advertisements were available, the control group viewed an unrelated advertisement and the treatment group watched an advertisement with a gender stereotype of the main brand beer. The treatment advertisement showed a men performing tasks such as drilling a hole, fixing a bike and opening a jar while women watched from the background or sidelines, the advertisement is therefore considered a traditional gender role stereotype. The willingness to pay a price premium was calculated with a multinomial logistic regression model where we estimated the utility of individual brands and the utility of price. The two groups were compared on willingness to pay and on Likert-type brand equity questions. Control group had a willingness to pay of 7.04 for the main brand versus an average of 1.43 willingness to pay of the treatment group. From the results and analyses we can concluded that gender stereotyping has a negative effect on consumer brand equity of a FMCG. In this modern time where female empowerment and inclusivity are important, marketers should adapt their advertising tropes for the sake of their brand equity.

2. Introduction

The goal of this thesis is to contribute to the academic research being done in inclusive marketing with a novel method using a discrete choice survey.

2.1 Theory

Building a strong brand is an increasingly more important and focused upon marketing activity (Baltas & Saridakis, 2010; Buil et al., 2013; Hoeffler & Keller, 2003). In an imperfectly informed world, a brand can convey information about their product to consumers, which can influence their purchase choice (Swaiť et al., 1993). Not only do brands assist consumers in choosing, they also play an important role in the impact and influence of marketing activities (Keller & Lehmann, 2006). Customers are the core of any business and thus the importance of a distinct memorable brand is not to be overlooked (Gupta & Zeithaml, 2006).

2.2 Brand equity and measure

The consumers choose with their purchases what they find important, and thus with purchases they can show which brand they find more or less appealing (Hoeffler & Keller, 2003). Brand equity is the value of a brand and can also be defined as "the differential effect of brand knowledge on consumer response to the marketing of the brand" (Keller, 1993, p2). A brand with high brand equity, can have increased revenue and ask for a higher price than competitors (Ailawadi et al., 2003; Baltas & Saridakis, 2010; Keller & Lehmann, 2006). This so called price premium is one of the many advantages of high brand equity. Other aspects include: "increased advertising elasticity and decreased sensitivity to competitors prices" (Hoeffler & Keller, 2003; Keller & Lehmann, 2006, p7). There are many ways to measure brand equity, each can measure different aspects and capture another perspective of a brand's equity. Identified by Keller & Lehmann (2006) are three prominent brand equity perspectives: consumer based, company based, and financial based. The different ways of measuring brand equity was analyzed with a critical literature review. However, from the first orientation we identify price premiums, a monetary based

measure which compares willingness to pay for a brand relative to a benchmark or unbranded product. This measure can be used in both non survey based and survey based analyses. It therefore does not rely heavily on financial data from the stock market or annual year reports. This data can be harder to come by for large companies which carry multiple brands. For private unlisted companies this would be even more of a challenge. While some argue price premiums do not capture all qualities and advantages of a strong brand (Aaker, 1996; Ailawadi et al., 2003), multiple models have found that the price premium as single measure is effective and comprehensive (Aaker, 1996; Baltas & Saridakis, 2010; Keller & Lehmann, 2006). Besides the price premium being effective and comprehensive, it is also simple to measure of how consumers show their perception of brand equity.

2.3 Brand equity and advertising

Branding conveys information of various aspects of a product, which might be more difficult to quantify than a more objective measureable aspect such as “added sugars” or “real leather”. Brands are multipurpose, besides conveying information about aesthetics and reputation (Baltas & Saridakis, 2010), they can increase the effectiveness of marketing and advertisement and vice versa (Keller & Lehmann, 2006). Advertising is a marketing activity with the purpose to inform, convince and create desire for a product or brand (Buil et al., 2013). If consumer perceive a brand is highly advertised, typically they perceive the brand equity to be higher also (Buil et al., 2013; Yoo et al., 2000). Higher advertisement spend can create stronger brand associations and brand awareness (Buil et al., 2013). Furthermore, advertising can increase purchases by loyal customers, and decrease price sensitivity for a brand (Hsu & Liu, 2000; Kanetkar et al., 1992). Including brand personality and elements associated with the brand into advertisements can also have beneficial effects, such as increased attention and remembrance of the brand and its elements (Hoeffler & Keller, 2003). When multiple different marketing practices recur brand elements, in a form of synergy, advertisement is more effective (Keller & Lehmann, 2006; Naik & Raman, 2003). All these effects of advertisement work together to increase consumer’s familiarity with the brand, and eventually the brand equity. Consumers tend to choose familiar and perceived high value

brands (Hoeffler & Keller, 2003), and are willing to pay for positively branded products (Baltas & Saridakis, 2010).

2.4 Gender stereotyping in advertisement

Feminine and masculine advertising with gender stereotypes has been a marketing strategy for a very long time and is still prevalent today (Eisend, 2009, 2019; Schroeder & Borgerson, 1998; Signoretti, 2017). Men and women approach purchasing very differently, and therefore also respond differently to advertising (Kraft & Weber, 2012). Women are more emotional and want long term, high quality solutions and products, while men make more impulsive purchases (Kraft & Weber, 2012; Lund, 2008). Advertising effectiveness of gender stereotypes have been found to be positive and negative. The reaction depends on if the consumers views are in line with the portrayed stereotype (Eisend, 2019). Using traditional gender stereotyping can alienate consumers, especially women. Men are known to favor the traditional gender stereotyping while, women prefer non-stereotypical gender roles or counter stereotypical gender roles, where a male celebrity might promote an inherently female product (Chu et al., 2016; Eisend, 2019). Studies find women make 85% of buying decisions, making them a primary target for marketing and not a group to alienate (Kraft & Weber, 2012).

Advertisements featuring gender stereotyping can create harmful effects, especially for women who are often negatively portrayed (Eisend, 2019). The jury is still out if gender stereotyping in advertisements reflects values that the public has, or that the advertisement helps create and promote gender stereotyping. Regardless of the mode, the negative effects of gender stereotyping on psychological well-being have been proven many times in people of all genders and even children (Maker & Childs, 2003). However, it is uncertain if these negative effects linked to gender stereotyping in advertisement negatively or positively influences brand equity.

2.5 Discrete choice experiments

Discrete choice experiments (DCE) present respondents with choice sets where they have to choose one alternative they prefer (Terris-Prestholt et al., 2019). These choice sets contain alternatives with differing levels of characteristics, also called attributes. The assumption is that the respondent choses the alternative with the highest level of utility, which can be understood as the relative importance of attributes (Croissant, 2020a). The responses can be used the measure the value placed on each attribute via multinomial logistic regression analysis (Glenngård et al., 2013). Previous research has shown that a choice based consumer experiment can measure the utility of a brand (Swaiť et al., 1993). When a price attribute is included, it can be used to measure willingness to pay (WTP). DCEs have been used in a wide range of fields, such as economics and marketing (Mangham et al., 2009). A choice based survey has a preference over ranking or rating based experiments, as it is more straight forward and realistic (Mangham et al., 2009; Moore, 2004).

2.6 Research question

In this study we research if gender stereotyping in advertising impacts brand equity. The research question is: "What is the impact of a gender stereotype in an advertisement on consumer brand equity of a FMCG brand?". We establish the following hypothesis:

H1: Gender stereotypes in advertising have a negative effect on consumer brand equity

This hypothesis was established based on the negative psychological effect gender stereotyping has been shown to have (Maker & Childs, 2003). This research is novel as most of the academic research in gender stereotyping in marketing is focused on the perception of the actual stereotype, and less so on the brand equity of the brand behind the advertisement (Eisend, 2019). Furthermore, the method of using a choice experiment after an advertisement stimuli is rare. This research is relevant as negative gender stereotypes in advertisements can confirm and propagate harmful stereotypes in the real world (Eisend, 2019;

Schroeder & Borgerson, 1998). In a time of #metoo, female empowerment and fluid gender roles it is important our advertising does not harm the previously oppressed and brands move with the current times. Therefore it is important to understand if these gender stereotypes are harmful for brand equity, so marketers might be stimulated to move away from gender stereotypes.

To answer the research question and test the hypotheses a DCE survey is used, where the focus will be on consumer based brand equity. This is measured by consumers' willingness to pay (WTP), in effect this is measuring if consumers are willing to pay a price premium for a brand versus another brand. If for a certain attribute consumers are willing to pay more, this can be taken for a higher quality and value perception. Even in an imperfectly informed world, the increased WTP can signal a belief and positive attitude towards a brand, as it serves to inform the uninformed consumers. The method doesn't require gathering subjective data, but relies solely on a choice based survey where respondents can rely on their quick intuitive decision making, as if they are actual consumers. In order to avoid large quality difference which might influence consumer preference, in this study we use Dutch pilsner beer as analysis product. Pilsner beer can be considered a quality homogenous product, which makes it ideal (Tremblay & Tremblay, 1988). By using beer the difference in consumer preference can be more easily attributed to advertisement or brand equity effects.

In the following section a critical review is presented which supports the theoretical framework of brand equity measures. Then the methodology of the research is explained further, followed by results, discussion and finally the conclusion.

3. Critical review

In this thesis a critical review is performed to support the theoretical frame. In the review a conceptual framework of how brand equity can be measured is created. Current techniques, gaps and the future perspective are assessed. In this section a sub research question is maintained: "What methods can be used to measure brand equity?". This critical review is novel and relevant as many articles only focus on

one perspective or technique, but there is no framework which gives a bird's eye view of the current state of measuring brand equity. Furthermore, in the evolving landscape of advertising with digital techniques, the measures of brand equity can incorporate more data leading to potential new methods. This looking forward is important to bring the current techniques and future of the brand equity measuring together.

3.1 Method

For the critical review Google Scholar and Web of Science databases were searched for academic articles with the keywords: "brand equity", "brand measures" and "brand advertisement" using different combinations and sequences to identify the full scope the keywords could capture. The derivatives and synonyms were employed as well, for example "advertising" or "value". During the search it became apparent that there are three perspectives should be included as well, to also include more specific measures. These were: "consumer perspective", "firm based perspective" and the "financial based perspective". From these searches 3882 hits were found. Relevant academic contributions were selected based on a set of exclusion and inclusion criteria. Exclusion criteria were: language other than English, published before 2010 and articles about something other than advertisement. Inclusion criteria were: empirical study and focus on societal or psychological impacts. Finally, any doubles were filtered out. In the schematic figure 1, below, the effect of these 5 criteria on the original 3882 hits can be seen. The remaining articles were screened on abstract and then read in full. The focus was the brand equity or other brand measures, papers which did not include a concrete measurement were therefore excluded. In the end 34 academic articles remained in the set. See figure 1 and appendix table 1A. Many of these papers referred to older scales or measures, so using a snowballing approach these were used to describe the results as well (Greenhalgh & Peacock, 2005). They are not included in the PRISMA figure, as they did not follow the literature review methodology this figure is describing. For the reading and reviewing the different methods used to interpret the brand equity or value were critically assessed and used as the main differentiating point between articles. Using (Hoeffler & Keller, 2003) and their distinction between

consumer, firm and financial brand equity, the first themes were set up and adapted throughout the review.

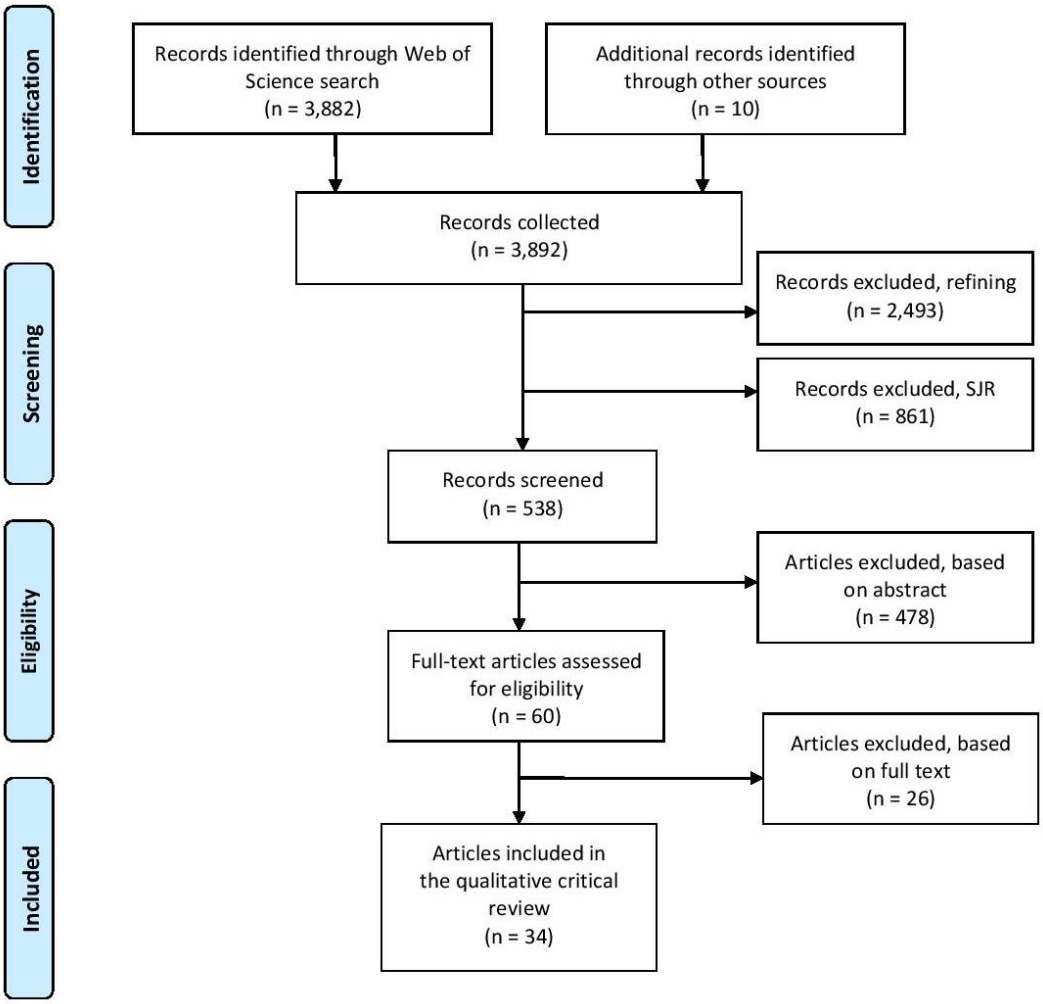

Figure 1. PRISMA scheme of critical literature review selection

3.2 Findings

The critical literature review of 34 selected articles (list in appendix table 1A), and 10 referenced brand equity measures (list in table 2), yielded the following results. The primary focus in all articles identified in the critical review was consumer based equity (88%), the remaining articles focused on equity, such as B2B brand equity. The main study type was empirical analysis (76%), 15% of articles used prior collected data. The main measuring method was consumer surveys (71%). Brand equity was conceptualized by

varying amount and concepts. In table 1 an overview of these concepts and their popularity was created. In total 39 different concepts were found. The most popular concepts were: brand image, perceived quality, brand loyalty and brand awareness.

Table 1. The various concepts used to measure brand equity found in the literature review

Concept to measure	**Sum of use**	**%**
Brand image	14	36%
Perceived quality	14	36%
Brand loyalty	13	33%
Brand awareness	9	23%
Brand attitude	4	10%
Brand associations	3	8%
Brand knowledge	3	8%
Performance	3	8%
Value	3	8%
Brand affect	2	5%
Trust	2	5%
Brand recognition	2	5%
Brand management efficiency	2	5%
Customer perceived ethicality	2	5%
Feelings about the brand	2	5%
Masstige mean index	2	5%
Resonance	2	5%
Satisfaction	2	5%
Judgments	1	3%
Intention to travel	1	3%
Attachment	1	3%
Brand appeal	1	3%
Brand Asset Valuator	1	3%
Brand differentiation	1	3%
Brand equity	1	3%
Brand heritage	1	3%
Brand purchase intention	1	3%
Competence and benevolence	1	3%
Excitement	1	3%
Identity	1	3%
Judgements	1	3%
Personality	1	3%
Price premium	1	3%
Recommendation	1	3%

Regional affiliation	1	3%
Salience	1	3%
Status	1	3%
The prominence of the brand	1	3%
Work place-reputation	1	3%

While the literature review yielded many results, displayed in table 1 above. The referenced articles were often more in depth. Therefore a second table (table 2) was created combining brand measure and brand analysis together from the referenced articles, per brand equity perspective. This second table also helps identify the research gaps discussed below.

Table 2. Three types of brand equity perspectives with multiple concepts to assess each perspective. In the third column analysis possibilities for the measures are listed. The forth column has a short description of each brand equity perspective. The final column has relevant references.

Brand equity perspective[1]	**Concept to measure**	**Analysis possibilities**	**Description of perspective**	**References**
Customer based Customer attraction to "nonobjective" part of product due to brand knowledge	Awareness-Interest-Desire-Action (AIDA) Brand awareness Brand image Customer satisfaction Service quality Loyalty Intentions to purchase Perceived quality on various product and service dimension Willingness to continue to purchase a brand	Event triggered survey Satisfaction indexes Repeat purchase rate Relative purchasing volume Net promoter score Choice based surveys Top of mind recall Willingness to pay	The measures of customer based brand equity can be done at brand level, overall or cumulative of all experiences with the business. Customer perspective is often used and marketing managers are familiar with it. Many analysis do not have a direct link to a monetary measure.	Aaker, 1991; Agarwal & Rao, 1996; Gupta & Zeithaml, 2006; Keller, 1993; Keller & Lehmann, 2006
Company based: The additional value due to	Price premiums	Profit Stock market value	The company based approach assesses the impact of the value of a	Aaker, 1996; Gupta & Zeithaml, 2006;

presence of the brand when compared to unbranded	Increased advertising elasticity Decreased sensitivity to competitors prices Secure and maintain distribution through channels	Tobin's q (market value of company divided by assets replacement costs) Return on asses Return on investment Abnormal earning Cash flow Surveys Market share Conjoint analysis	brand on the product market. These can more easily be measured in monetary terms.	Hoeffler & Keller, 2003; Wang et al., 2008
Financial based: The price a brand would bring, as an asset	The component of market value unexplained by financial assets and profits Replacement cost Brand factors Brand strength to economic value added Value relevance measures	Tobin's q Market share equation Survey Stock market values Perceived quality ratings Historic data of name changes Firm acquisitions	The stock market and financial market performance is the center of the financial based approach. Here most measures are in monetary terms. They are often related to perceived quality or brand awareness to understand more intangible aspects.	Aaker & Jacobson, 1994, 2001; Keller & Lehmann, 2006

[1]Keller & Lehmann (2006) adaptation.

3.3 Outcome

In the review the following research gaps were identified. First, the focus in the recent articles was almost solely on consumer based brand equity. While in earlier articles, identified in the theory chapter and the referenced articles, included firm and financial brand equity (Hoeffler & Keller, 2003).

Secondly, the research is very restricted to empirical analysis, while there is a plethora of data and alternative methods, see table 2. Using empirical analysis also means high percentage of consumer surveys were employed. This result of the high use of empirical analysis can be seen as an extension of the research gap.

Lastly, the relation between concepts is not thoroughly understood. While some articles used predefined scales, many adapted them without much underpinning. The lack of firm scientific basis of when to include or exclude a certain concept can mean the research is unintentionally skewed, or in the worst case intentionally biased. Therefore the third research gap is the relation between concepts. Addressing this gap and therefore establishing a scientific understanding can allow for more underpinned and theoretical use of the various brand equity concepts identified in tables 1 and 2 via the critical literature review and referenced articles.

In conclusion, the critical review results show the current state of brand equity measures. The most used measurement tool is consumer surveys, generally used to measure consumer brand equity. The most common concepts are derived from (Keller & Lehmann, 2006). 3 research gaps were identified, namely the other brand equity types are mostly missing, research is restricted to empirical analysis and the relation between concepts. The literature review support the brand equity measure of WTP and price premium used in the choice based experiment, therefore the DCE could proceed. The following section explains the methodology of the DCE survey.

4. Methodology

In this section we discuss the actual quantitative research performed to answer the research question: "What is the impact of a gender stereotype in an advertisement on consumer brand equity of a FMCG brand?". The research performed is a discrete choice based experiment designed in R (R Core Team, 2019), with the package Idefix (Traets et al., 2020a), hosted via Qualtrics (Qualtrics, 2021), and analyzed with a multinomial logit model from the package mlogit (Croissant, 2020b).

4.1 Research design

An online survey was created with Qualtrics (Qualtrics, 2021), see the preview in appendix 2A. The survey was distributed amongst a convenient sample online in The Netherlands via university students

and business contacts (Alpha.One). Two types of surveys were offered. The respondents are split between control and treatment. In the control group respondents viewed a non-food advertisement of 30 seconds without any obvious gender roles (Appendix 3A). In the treatment group the respondents saw one main brand pilsner advertisement with a traditional gender stereotype of 40 seconds (Appendix 4A). Two attributes were selected, price and brand. These were chosen to measure WTP for each brand. The DCE design allows for a straightforward line of questioning with 4 choices per questions, as if the respondents would be choosing in a store like setting without any additional information or leading questions. Price had 5 levels and there were 8 brand levels (see Table 3). The price levels were based on the price of a 6 pack of cans for the minimum, average and most expensive brand. The brands chosen together made up 89% of the Dutch beer market (Dennis Vereecken, 2018; Ritzen, 2016).

Table 3. Attribute and levels that make up the profiles

Attribute	**Levels**	**Specification levels**
Price	Minimum	€ 2.59
	Reduced	€ 3.51
	Average	€ 4.42
	Increased	€ 5.34
	Maximum	€ 6.25
Brands	Main brand	Kordaat
	Alternative brand 1	Kornuit
	Alternative brand 2	Bavaria
	Alternative brand 3	Brand
	Alternative brand 4	Hertog Jan
	Alternative brand 5	Jupiler
	Alternative brand 6	Heineken
	Alternative brand 7	Grolsch

4.2 Discrete choice experiment design

A full factorial design is a design that includes each attribute and combination level, in this case there would be 40 different combinations possible. In order to remain realistic 10 combinations were removed. These were the combination of the most expensive brand with the two lowest prices (2 removed), the cheapest brand with the two highest prices (2 removed), the above average expensive brands with the

lowest price (3 removed) and the below average expensive brands with the highest price (3 removed). From these possible combinations the choice sets were designed using the R package Idefix (Traets et al., 2020a). This package used Fedorov exchange algorithm to minimize D-error (Traets et al., 2020b). 100 designs were created and the design with the lowest D-error was selected for the survey.

Each choice set had 3 alternatives and a no choice option, thus respondents would view 4 alternatives per set. A total of 130 choice sets were included, of which a random 120 were distributed over the survey. The survey versions each contained 12 choice sets, and there were 10 survey versions in total. Splitting of the choice sets has been applied previously and is used to avoid choice fatigue and information overload (Glenngård et al., 2013). The choice sets were randomly distributed over the profiles. However, the randomized survey versions were assessed on even distribution of attributes, and therefore two choice sets were swapped between the second and third survey version.

4.3 Survey flow

The survey started with showing either the control or one of the two treatment advertisements to the respondent. Via a randomizer it was ensured that equal amount of respondents were randomly assigned to each type of survey. After viewing the advertisement, demographic questions were asked. These were followed up by the 12 choice sets, each with varying levels of the attributes. 10 different sets of 12 choice questions were made, we refer to these as survey versions. These survey versions were randomly and equally shown to respondents of both types of survey, control and treatment advertisement watcher groups. Each question featured 3 horizontally displayed alternatives with a picture of the brand and the price underneath. Also there was a no choice option which featured a simple white picture with the word “None”. This was done so it would be displayed more equally and respondents would not miss the no choice alternative. After the choice questions, 3 brand awareness questions were posed: “How familiar are you with the main brand?”, “How would you describe your overall opinion of the main brand?” and “How likely are you to purchase the main brand?”. This was followed with a control question to test

whether the respondent had watched the video. Finally the respondents could enter a raffle to win a 6 pack of cans of beer.

4.4 Data analysis

The survey data was collected by Qualtrics (Qualtrics, 2021), and exported to R (R Core Team, 2019). First data cleaning was performed and the data structure was changed to allow analysis. Respondents who did not complete the survey, did not buy beer or did not understand Dutch were to be removed. With data transformation the responses were prepared for multinomial logistic regression using the package R mlogit (Croissant, 2020b). Here the dependent variable was choice and the independent variables were price and the brands, where each brand was a separate variable. The multinomial logistic regression model was tested for assumptions using the Hausman-McFadden test. To measure WTP the level coefficient of the brand attribute was to be divided by the price coefficient attribute (Pérez-Troncoso, 2020). The Likert type brand questions were to be analyzed with descriptive statistics only.

5. Results

5.1 Data

From the 93 respondents, 11 responses were filtered out because respondents: were under 18 (3), never bought beer before (2), could not understand the language in the advertisement (3) or failed to complete all questions (3). Therefore the analysis went forward with 82 respondents who did comply with the inclusion criteria. First we describe some descriptive statistics in the table xx below. The control group included 39 respondents after data cleaning and the treatment group had 43 respondents. Of the respondents 60% were identified as male. 40.4% are aged 18 to 24, 30.3% are aged 25 to 34, 11.7% aged 35 to 44, 16.4% are aged 45 and 54 and the oldest category of 55 to 64 contained less than 2% of respondents. Nearly 50% had bought beer within the past week of time of response, while 34% had bought beer within the past month, 17% of respondents had bought beer for the last time more than a month ago. 3.67% respondents resides outside Europe, these were included as they understood the

advertisement language, the other respondents all reside in The Netherlands. In table XX below the percentage chosen brands can be seen, split between control and treatment. This gives some insights into which brands are most popular and if there is a preference amongst the groups. In the table XX below the times each brand was chosen at each price point is shown, also split between control and treatment. Here we have a good overview which will lead to the MNL model.

Table 4. Percentage of chosen brand when shown, split for control respondents and treatment respondents. None represents the no choice alternative.

	Control	Treatment
Main brand	31.6%	25.4%
Alternative brand 1	25.9%	32.7%
Alternative brand 2	30.6%	33.1%
Alternative brand 3	35.2%	25.7%
Alternative brand 4	37.7%	41.3%
Alternative brand 5	26.9%	21.7%
Alternative brand 6	25.1%	29.3%
Alternative brand 7	26.4%	35.9%
None	10.9%	7.9%

Table 5. Frequency each combination of price and brand was chosen, per respondent group. None represents the no choice alternative.

Prices	2.59		3.51		4.42		5.34		6.25		None	
	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment
Main brand	31	34	8	10	12	19						
Alternative brand 1	22	30	13	26	8	13	4	6				
Alternative brand 2	21	21	9	1	15	16	17	15				
Alternative brand 3			20	22	5	9	10	16	15	21		
Alternative brand 4			22	24	16	19	23	35				
Alternative brand 5			9	7	11	10	8	7	15	14		

Alternative brand 6		12	17	8	6	14	19	11	11	
Alternative brand 7		12	15	15	7	8	10	23	15	
None									51	41

At the end of the survey 3 main brand specific questions were asked in a Likert-type ordinal manner. The descriptive of these for the 82 respondents are below in figures 2, 3 and 4.

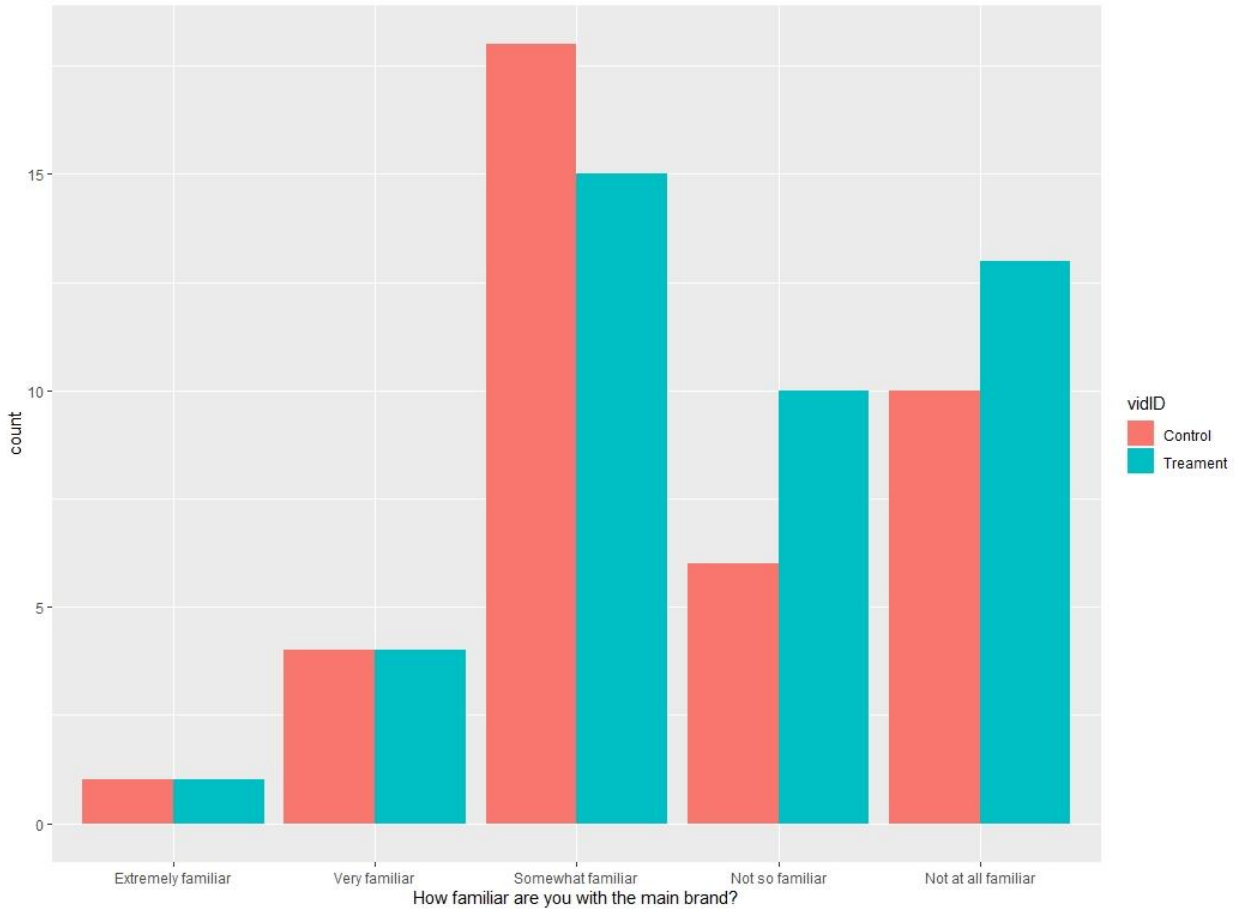

Figure 2. Descriptive statistics question "How familiar are you with the main brand?". On the y-axis the count of responses is posed. The X-axis ranges from extremely familiar to not at all familiar. The left bar, in orange, are the respondents of the control group and blue is the treatment group.

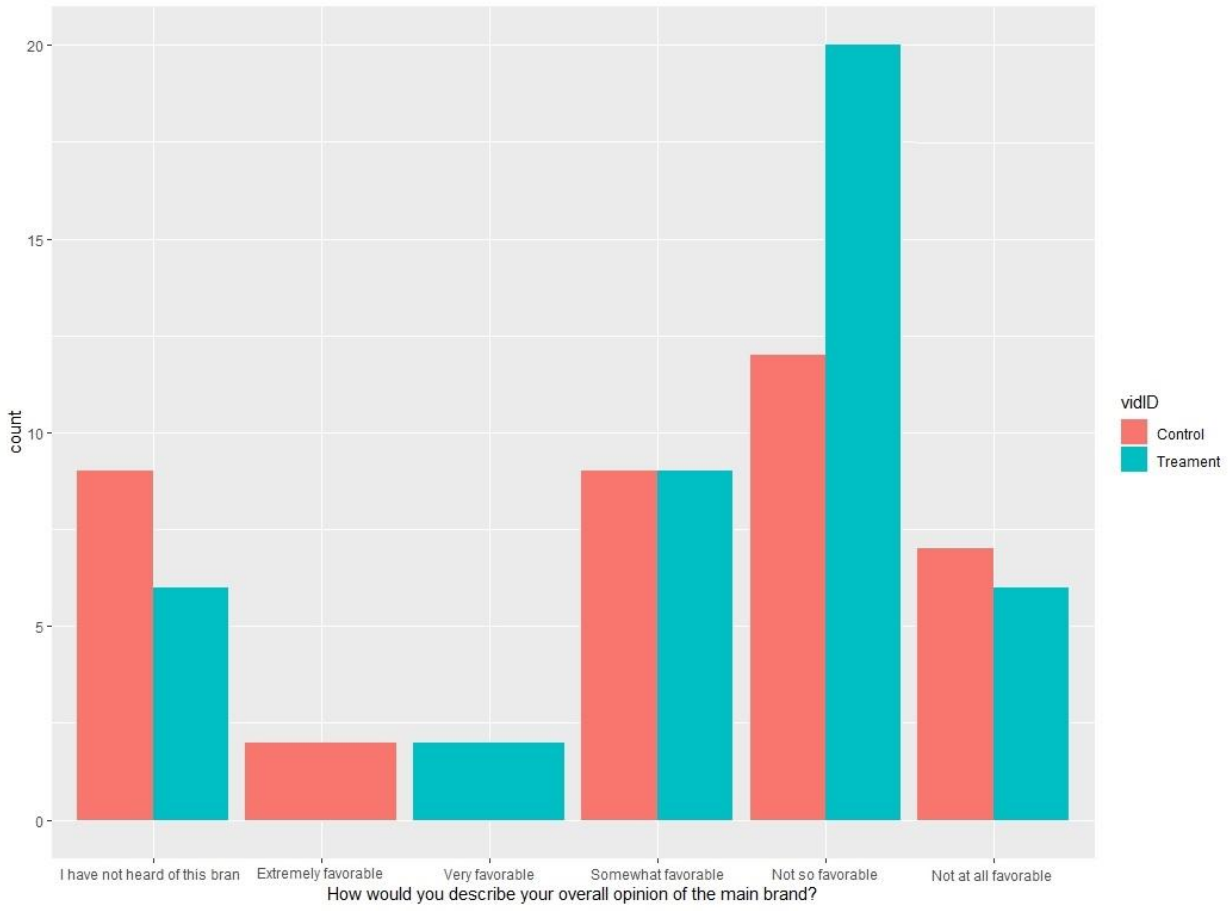

Figure 3. Descriptive statistics the question "What is your overall opinion of the main brand?". On the y-axis the count of responses is posed. The X-axis ranges from extremely favorable to not at all favorable and not familiar with the brand. The left bar, in orange, are the respondents of the control group and blue is the treatment group.

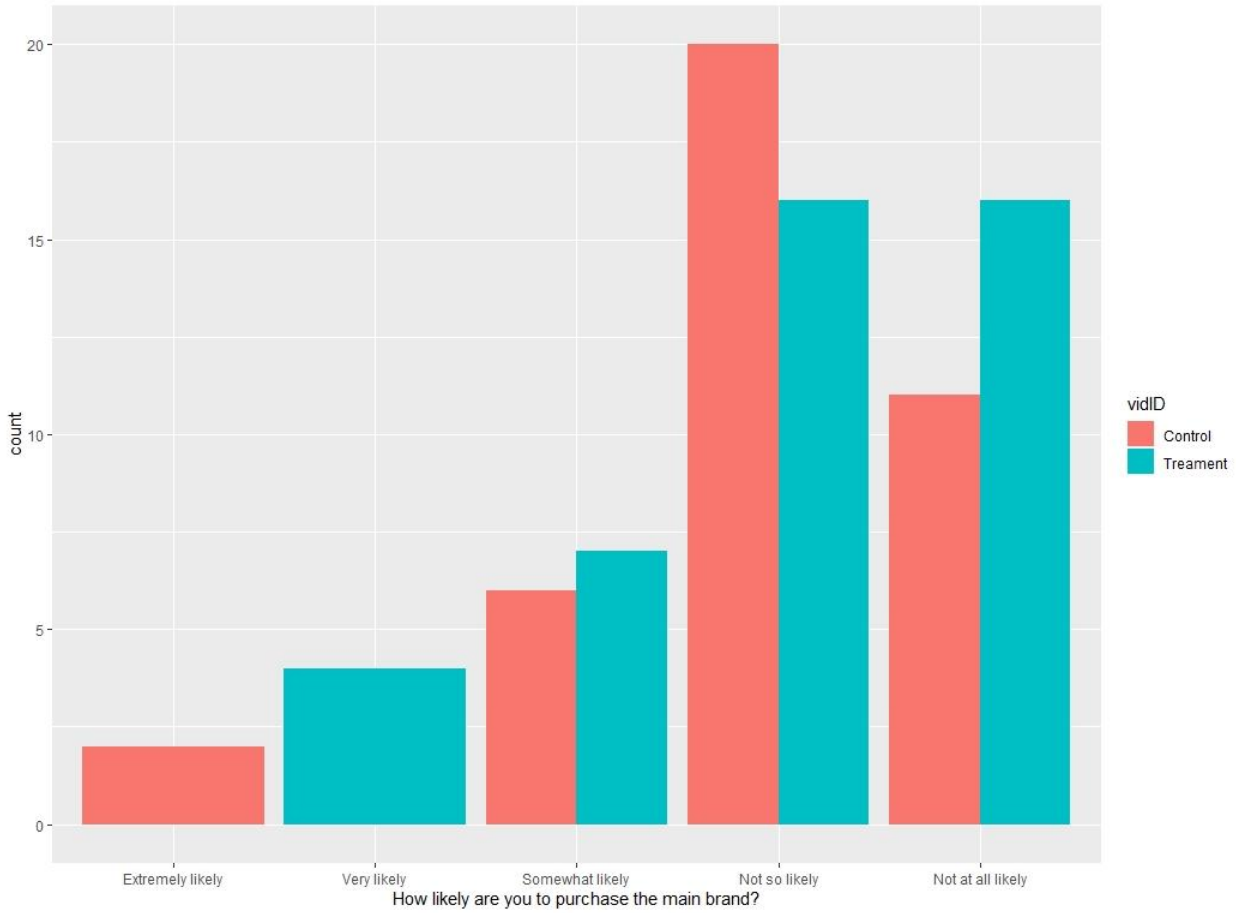

Figure 4. Descriptive statistics on the question "How likely are you to buy the main brand?". On the y-axis the count of responses is posed. The X-axis ranges from extremely likely to not at all likely. The left bar, in orange, are the respondents of the control group and blue is the treatment group.

5.2 Discrete choice experiment

In the model choice is the dependent variable and was estimated with the independent variables of price and each brand as separate variables. Price was recoded as a continuous variable from the original dummy coding. Also, each brand was dummy coded variable with the most sold brand as reference level. The DCE was performed three times. Once on the main model which included all respondents, then two models were estimated for each of the respondent groups. Of all models the results are in table 4.

A MNL model must meet certain assumptions, one of which is the independence of irrelevant alternatives (ILA). The IIA assumption states that alternatives are uncorrelated and that if a new alternative is introduced it would not change the preference between the original alternatives. However, this IIA assumption was not met in the main model. For this reason two models were compared, one with the hetereoscedasticity introduced and a homoscedastic model, using a likelihood ratio test. Heteroscedasticity implies that the error terms are not identically distributed. The likelihood ratio test was significant when comparing to a heteroscedastic model (P=0.0005119). This indicates that the heteroscedastic model can better estimate the model. Therefore in the main model, the homoscedastic assumption was relaxed by applying a heteroscedastic argument. The main model output is in the second column of table 4 below and the first bar of each cluster in figure 5 below.

For the testing of the hypothesis the respondents were split into the two treatment groups, one group who did watch the main brand advertisement (treatment) and one group who watched the unrelated brand advertisement (control). For both models the ILA assumption was also not met, therefore for both models a likelihood ratio test was done between a homoscedastic and a heteroscedastic model.

For the control group the likelihood ratio test was not significant, therefore we retained the homoscedastic assumption, the model output is shown in column 3 of table 4 below and in the middle bar of each cluster in figure 5 below. For the treatment group heteroscedasticity was significant, however the model only converged when one variable was removed. In table 4 the model with second most common brand removed is shown, this was also the most average model of the 6 estimated models (each model had one brand removed), this corresponds with the outer most bar of each cluster in figure 5.

From the coefficients in table 4 the WTP can be calculated. The WTP is calculated by dividing the main brand coefficient by the price coefficient. The WTP for the main brand for the main model was: 4.74, this included both control and treatment group. For the control group the WTP for the main brand was higher, with 7.04. Due to the model of the treatment group not converging when all independent brand variables were included, 6 models were estimated of which the most average one is shown in table 4. Therefore we

conduct a type of sensitivity analysis. For the sensitivity analysis of the heteroscedastic treatment group MNL model we removed each variable once, calculated the WTP and averaged all the WTP of each model with one variable removed. In the end the WTP for the treatment group varied between -1.58 and 3.61, with an average of 1.43. Therefore the difference between the WTP for treatment and control group was 5.61, with minimum difference of 3.43 and maximum difference of 8.62.

Table 6. MNL model results with coefficient β, significance level and standard error (SE) in brackets. The second column includes main model where both treatment and control group are included and heteroscedasticity is introduced. The third column includes the control model where participants who saw the control advertisement are included, the homoscedasticity assumption is left intact. In the final fourth column the treatment MNL model is shown. This includes only participants who saw the treatment advertisement, heteroscedasticity is introduced here shown with alternative brand 6 removed as this was most average between all the models.

Coefficients			
	β (SE) Main model	β (SE) control model	β (SE) treatment model
Prices	-0.0752*	-0.08215 .	-0.05653
	(0.032089)	(0.049433)	(0.039437)
Main brand	-0.3567*	-0.57846*	-0.20369
	(0.161303)	(0.235506)	(0.17302)
Alternative brand 1	-0.14983	-0.49696*	0.05407
	(0.152045)	(0.233442)	(0.161049)
Alternative brand 2	-0.36647*	-0.28759	-0.38465*
	(0.156583)	(0.222805)	(0.180366)
Alternative brand 3	-0.11713	-0.38438 .	0.022831
	(0.142723)	(0.218319)	(0.15208)
Alternative brand 4	0.293123*	0.048856	0.323257*
	(0.139116)	(0.221613)	(0.157664)
Alternative brand 5	-0.36399*	-0.36093	-0.3394 .
	(0.158183)	(0.240306)	(0.182407)
Alternative brand 6	0.072519	-0.17001	-0.16686
	(0.145802)	(0.22714)	(0.682408)
No choice	0.162787	-1.0324***	1.045946***
	(0.508598)	(0.238513)	(0.146498)
sp.2	1.156115***		0.617577***
	(0.113273)		(0.09839)
sp.3	0.835269***		0.400039
	(0.082872)		(0.437804)

sp.4	0.193515 (0.502609)

. =p<.0.1;*=p<.05; **=p<.01; ***= p<.001

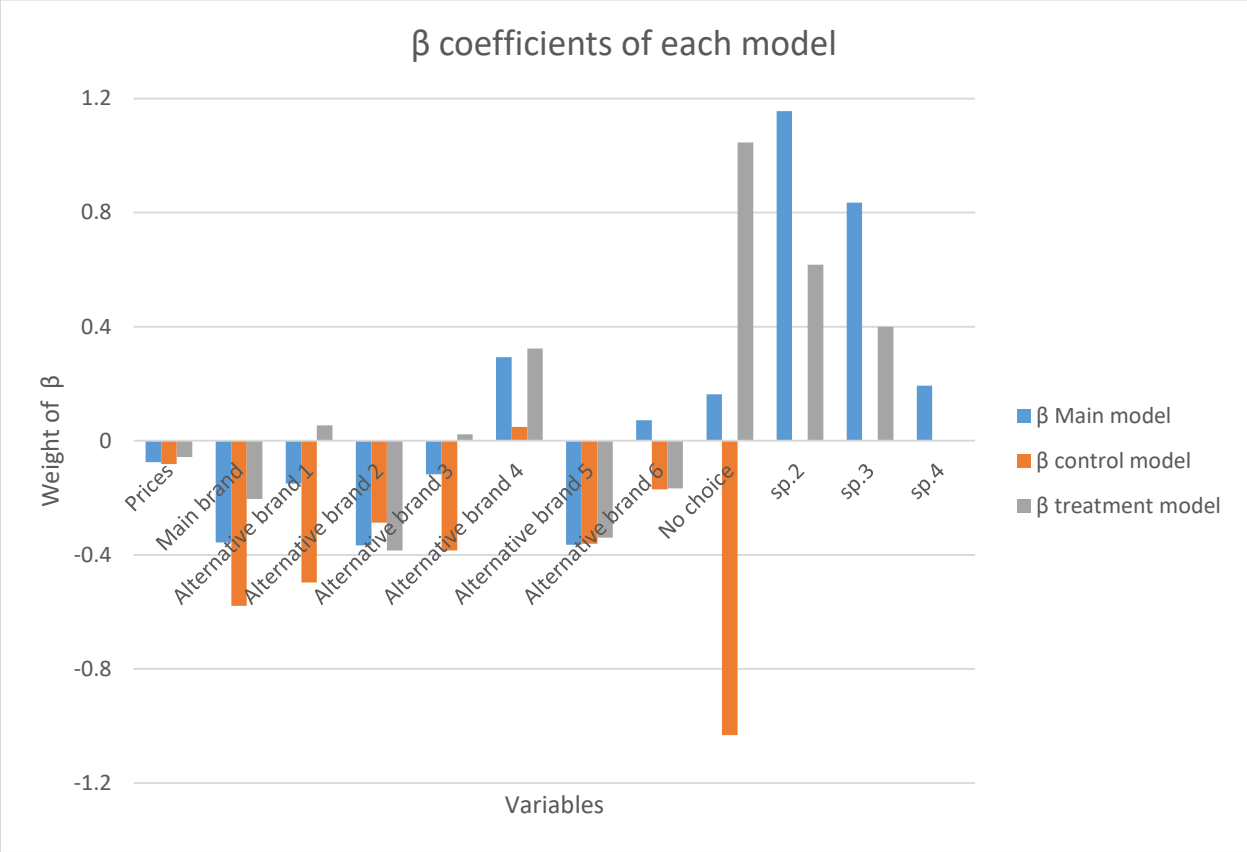

Figure 5. The β coefficients plotted as a bar chart to display differences and similarities. The blue bars are the main model where both treatment and control are included. The orange middle bars are control respondents only model and the gray outer most bar of each cluster is the plotted β coefficients of the treatment MNL model.

6. Discussion

The research question posed in the introduction is: "What is the impact of a gender stereotype in an advertisement on consumer brand equity of a FMCG brand?". From the results we can conclude that

respondents that did watch the main brand advertisement (treatment) have a lower WTP than the respondents who watched an unrelated advertisement (control). The WTP is calculated by dividing the coefficient for the main brand by the coefficient for price, this is in line with previous research (Glenngård et al., 2013). WTP is used as measure of consumer brand equity via the price premium measure. These measures were defined in the critical review and have been used to measure consumer brand equity in previous research. The treatment group respondents are less willing to pay a price premium than the control group respondents. This gives us reason to believe the advertisement with gender stereotyping has a negative impact on consumer brand equity. This conclusion is in line with the hypothesis posed in the introduction:

H1: Gender stereotypes in advertising have a negative effect on consumer brand equity.

This result is further supported by the Likert type brand questions posed at the end of the survey, of which the results are shown in figure 2, 3 and 4. When comparing both groups of respondents, treatment and control, we can see a difference in the reaction to the questions. Overall we see a more negative reaction to the main brand from the treatment group, which are the respondents that watched the main brand advertisement. Both types of respondents were approximately equally unfamiliar with the main brand, therefore brand recognition likely does not play a role in the difference in opinion of the brand between the groups.

This research is important as it suggests to avoid gender stereotyping in advertisement, as it can have a negative effect on consumer brand equity for a FMCG. Brand equity is valuable for marketers, products and brands as it says something about how consumers value the brand (Keller, 1993). The main finding of this research is valuable for current marketers and researchers. From the field of psychology we know gender stereotyping can be harmful for society, even from a young age (Maker & Childs, 2003). Add to that that women are responsible for most of the grocery shopping (Kraft & Weber, 2012), and that often gender stereotypes are perceived especially negatively by women (Eisend, 2019), it might be time for marketers to move away from gender stereotypes as advertisement trope. Currently society as a whole is

undergoing a change towards inclusivity and with this research marketers will finally have a push to move away from the old gender stereotypes.

Yet, the conclusion has to be drawn carefully, a model is always a hypothetical estimation of reality which cannot capture all the complexities. Furthermore, this study has limitations as only one brand and one ad was shown. Therefore the difference in WTP can be caused by something other than the gender stereotype. This could range from other elements in the advertisement, the brand associations with the main brand or the brand associations with the alternative brands. Furthermore the advertisement could be seen as a hyperbolic gender stereotype, thus considered comical. While this still is a gender stereotype, humor in advertisement can have a positive effect on consumer brand perception (Gelb & Pickett, 1983). In future research this experiment should be repeated with multiple brands with corresponding gender stereotyped advertisement. Certain brands might be more susceptible to statistical inference and therefore including more brands and advertisements would make the conclusion more robust. This would be interesting to compare with a non-stereotypical gender role (NSGR) advertisement When the advertisement introduces a small change which does not fit in the consumer's expectation pattern, we call this a NSGR and its found to increase public attention (Chu et al., 2016). NSGR can be perceived positively even if it does not fit with the consumer's views, because of a novelty or surprising aspect. It can also backfire and have a negative effect due to discomfort and resistance.

The estimated MNL models did not meet the IIA assumption. This is not unexpected as the brands are all beer types and can therefore be considered correlated alternatives. There is a strong preference amongst regions in The Netherlands for certain types of brands. Even though pilsner can be considered similar in quality (Tremblay & Tremblay, 1988), the brand alternatives can be considered relevant by a consumer. The IIA assumption has been critiqued, for failing to account for established preference and human behavior (Dow & Endersby, 2004). Still, following the likelihood ratio test as guide the price variable was nested and changed to a continuous variable from the original dummy coded variables. Heteroscedasticity was also introduced in the main model and in treatment group model. However, the

latter did not converge with all brand variables when heteroscedasticity was introduced. In order to work around a sensitivity analysis was performed on the model by removing a different brand each time, leading to a range of WTP. This, together with failing to meet the IIA assumption, can be of influence on the robustness of the research.

The current conclusion is limited to only FMCG types of products, and Dutch speaking respondents between the ages of 18 and 64. This means the research cannot be extrapolated to many other groups of respondents or products. The future research should therefore also include a varied group of respondents, where the differences between nationalities, age groups and gender can confidently and robustly be modeled.

7. Conclusion

With the two MNL models we can conclude that a gender stereotype in an advertisement has a negative impact on consumer brand equity of a FMCG brand. This is in line with the hypothesis H1: Gender stereotypes in advertising have a negative effect on consumer brand equity. In the current state of society where female empowerment, inclusivity messages, and equality are center stage, for the sake of their brand equity, marketers should start asking themselves whether they want to keep the old gender stereotypes or use a fresh perspective and move with the times.

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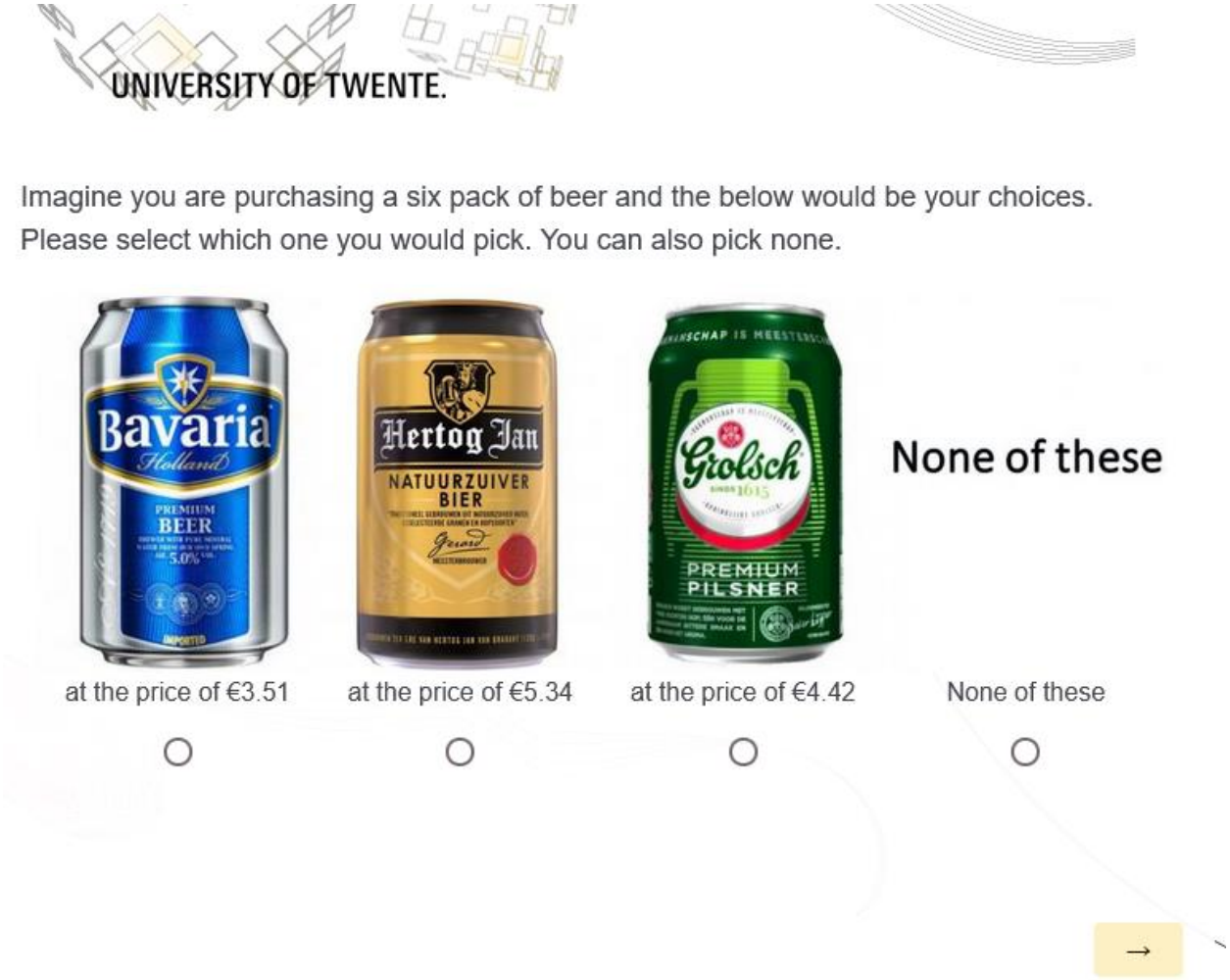
9. Appendix

Table 1A. List of articles included in the results for the critical literature review

Author	Title	Date
Godey, Bruno; Manthiou, Aikaterini; Pederzoli, Daniele; Rokka, Joonas; Aiello, Gaetano; Donvito, Raffaele; Singh, Rahul	Social media marketing efforts of luxury brands: Influence on brand equity and consumer behavior	2016
Datta, Hannes; Ailawadi, Kusum L.; van Heerde, Harald J.	How Well Does Consumer-Based Brand Equity Align with Sales-Based Brand Equity and Marketing-Mix Response?	2017
Iglesias, Oriol; Markovic, Stefan; Jit Singh, Jatinder; Sierra, Vicenta	Do Customer Perceptions of Corporate Services Brand Ethicality Improve Brand Equity? Considering the Roles of Brand Heritage, Brand Image, and Recognition Benefits	2019
Yoo, Jungmin; Park, Minjung	The effects of e-mass customization on consumer perceived value, satisfaction, and loyalty toward luxury brands	2016
Zavattaro, Staci M.; Daspit, Joshua J.; Adams, Frank G.	Assessing managerial methods for evaluating place brand equity: A qualitative investigation	2015
Sierra, Vicenta; Iglesias, Oriol; Markovic, Stefan; Jit Singh, Jatinder	Does Ethical Image Build Equity in Corporate Services Brands? The Influence of Customer Perceived Ethicality on Affect, Perceived Quality, and Equity	2017
Kumar, Ajay; Paul, Justin	Mass prestige value and competition between American versus Asian laptop brands in an emerging market-Theory and evidence	2018
Paul, Justin	Masstige model and measure for brand management	2019
Lieven, Theo; Hildebrand, Christian	The impact of brand gender on brand equity Findings from a large-scale cross-cultural study in ten countries	2016
Yoganathan, Dhanushanthini; Jebarajakirthy, Charles; Thaichon, Paramaporn	The influence of relationship marketing orientation on brand equity in banks	2015
Grohmann, Bianca; Bodur, H. Onur	Brand Social Responsibility: Conceptualization, Measurement, and Outcomes	2015
Winzar, Hume; Baumann, Chris; Chu, Wujin	Brand competitiveness Introducing the customer-based brand value (CBBV) - competitiveness chain	2018
Delgado-Ballester, Elena; Fernandez Sabiote, Estela	Brand experimental value versus brand functional value: which matters more for the brand?	2015
Eggers, Fabian; Eggers, Felix; Kraus, Sascha	Entrepreneurial branding: measuring consumer preferences through choice-based conjoint analysis	2016
Rosengren, Sara; Dahlen, Micael	Exploring Advertising Equity: How a Brand's Past Advertising May Affect Consumer Willingness to Approach Its Future Ads	2015
Raithel, Sascha; Taylor, Charles R.; Hock, Stefan J.	Are Super Bowl ads a super waste of money? Examining the intermediary roles of customer-based brand equity and customer equity effects	2016

Kim, Seongseop (Sam); Schuckert, Markus; Im, Holly Hyungjeong; Elliot, Statia	An interregional extension of destination brand equity: From Hong Kong to Europe	2017
Rahman, Mahabubur; Rodriguez-Serrano, M. Angeles; Lambkin, Mary	Brand management efficiency and firm value: An integrated resource based and signalling theory perspective	2018
Boenigk, Silke; Becker, Annika	Toward the Importance of Nonprofit Brand Equity RESULTS FROM A STUDY OF GERMAN NONPROFIT ORGANIZATIONS	2016
Rahman, Mahabubur; Angeles Rodriguez-Serrano, M.; Lambkin, Mary	Brand equity and firm performance: the complementary role of corporate social responsibility	2020
Shuv-Ami, Avichai	A new market brand equity model (MBE)	2016
Li, Fuan; Xu, Lan; Li, Tiger; Zhou, Nan	Brand trust in a cross-cultural context: test for robustness of an alternative measurement model	2015
Tanouri, Afshin; Mulcahy, Rory; Russell-Bennett, Rebekah	Transformative gamification services for social behavior brand equity: a hierarchical model	2019
Santisi, Giuseppe; Vullo, Cinzia; Platania, Silvia	THE VALUE OF BRANDS OF THE TYPICAL SICILIAN WINE IN THE CONNOISSEURS AND OUTDOOR	2017
Garg, Ebha; Swami, Sanjeev; Malhotra, Sunita Kumari	Branding effectiveness measurement in non-profit environment	2019
Sarkar, Soumya; Bhattacharjee, Titas	Impact of Voluntary Disclosures on Corporate Brand Equity	2017
Hasni, Muhammad Junaid Shahid; Salo, Jari; Naeem, Hummayoun; Abbasi, Kashif Shafique	Impact of internal branding on customer-based brand equity with mediating effect of organizational loyalty An empirical evidence from retail sector	2019
Downer, Lorann	It's the Equity Stupid! Protecting the Value of the Partisan Brand	2016
Lithopoulos, Alexander; Latimer-Cheung, Amy E.	An Experimental Application of the Brand Equity Pyramid Using a Healthy Movement Product Brand	2020
Canziani, Bonnie; Byrd, Erick T.	Exploring the Influence of Regional Brand Equity in an Emerging Wine Sector	2018
Tran, Trang P.; Lin, Chien-Wei; Baalbaki, Sally; Guzman, Francisco	How personalized advertising affects equity of brands advertised on Facebook? A mediation mechanism	2020
Gorbatov, Sergey; Khapova, Svetlana N.; Oostrom, Janneke K.; Lysova, Evgenia I.	Personal brand equity: Scale development and validation	2020
Zarantonello, Lia; Grappi, Silvia; Formisano, Marcello; Brakus, Josko	How consumer-based brand equity relates to market share of global and local brands in developed and emerging countries	2020
Frias, Dolores M.; Castaneda, Jose-Alberto; del Barrio-Garcia, Salvador; Lopez-Moreno, Lorenza	The effect of self-congruity and motivation on consumer-based destination brand equity	2020

Appendix 2A. Qualtrics choice task preview



Appendix 3A. Control group advertisement of an unrelated brand without any obvious gender stereotypes.

Appendix 4A. Treatment group advertisement of the main brand pilsner beer with obvious gender stereotypes.