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CATÓLICA  
PORTUGUESA

**ARE CONSUMERS ALWAYS RIGHT, EVEN WHEN THEY ARE WRONG?**

**THE IMPACT OF CONFIDENCE MANIPULATION ON ADVERTISING  
EFFECTIVENESS AND WILLINGNESS TO BUY**

Dissertation presented to Universidade Católica Portuguesa to  
obtain the Master's degree in Psychology in Business and Economics

By:

Robin Jan Craps

Faculty of Human Sciences

August 2025



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## **Abstract**

This thesis investigates whether manipulating consumer confidence through feedback can influence purchase intention in an advertising context. While previous literature highlights the role of knowledge confidence in shaping decision-making, this study explores how a confidence manipulation, in this case through providing feedback, may impact the effectiveness of advertising. Drawing from the elaboration likelihood model and the theory of planned behaviour, the research focuses on whether minimal feedback on a knowledge task, affects consumers' willingness to buy a fictional snorkelling product. A total of 171 participants were randomly assigned to either a control group or one of two feedback conditions (positive or negative), depending on whether they answered a marine life knowledge question correctly. They then viewed an advertisement whose phrasing depended on condition. Purchase intention was measured using a three-item intention scale. Results indicate that feedback did not significantly increase willingness to buy across conditions. However, participants who received negative feedback showed significantly lower purchase intentions compared to the control group. This suggests that negative feedback can reduce ad effectiveness, potentially due to emotional reactions such as defensiveness or resistance. No significant gender differences were found, contradicting earlier research that proposed confidence-related differences in advertising response between men and women. Overall, this study suggests that manipulating a consumer's sense of confidence, even with the goal of offering a more "fitting" advertisement, can backfire. This raises ethical and practical questions about how far marketers should go in correcting their audiences.

*Keywords:* confidence, feedback, willingness to buy, marketing, advertising effectiveness

## Resumo

Esta tese investiga se a manipulação da confiança do consumidor por meio de feedback pode influenciar a intenção de compra num contexto publicitário. Embora a literatura anterior destaque o papel da confiança no próprio conhecimento na tomada de decisão, este estudo explora como uma manipulação de confiança, neste caso através do fornecimento de feedback, pode impactar a eficácia da publicidade. Com base no modelo da probabilidade de elaboração e na teoria do comportamento planejado, a investigação analisa se um breve feedback após uma tarefa de conhecimento afeta a disposição dos consumidores para comprar um produto fictício de mergulho com snorkel. Um total de 171 participantes foi aleatoriamente distribuído entre um grupo de controlo ou um de dois grupos de feedback (positivo ou negativo), dependendo de terem respondido corretamente a uma questão sobre vida marinha. Em seguida, visualizaram um anúncio cuja formulação variava consoante a condição. A intenção de compra foi medida através de uma escala composta por três itens. Os resultados indicam que o feedback não aumentou significativamente a intenção de compra entre as condições. No entanto, os participantes que receberam feedback negativo apresentaram uma intenção de compra significativamente inferior em comparação com o grupo de controlo. Isto sugere que o feedback negativo pode reduzir a eficácia da publicidade, possivelmente devido a reações emocionais como defensividade ou resistência. Não foram encontradas diferenças significativas entre géneros, contrariando investigações anteriores que propunham diferenças relacionadas com a confiança nas respostas publicitárias entre homens e mulheres. De forma geral, este estudo sugere que manipular a confiança do consumidor, mesmo com o objetivo de oferecer uma mensagem mais “adequada”, pode ter um efeito contrário ao esperado. Isto levanta questões éticas e práticas sobre até que ponto os profissionais de marketing devem ir ao tentar corrigir as perceções do seu público.

*Palavras-chave:* confiança, feedback, intenção de compra, marketing, eficácia da publicidade

## Table of Contents

|                                                        |    |
|--------------------------------------------------------|----|
| CHAPTER 1: INTRODUCTION .....                          | 1  |
| CHAPTER 2: LITERATURE REVIEW .....                     | 3  |
| 2.1 Marketing & Advertising .....                      | 3  |
| 2.2 The Elaboration Likelihood Model.....              | 3  |
| 2.3 Purchase Intention.....                            | 4  |
| 2.4 Confidence & Overconfidence.....                   | 4  |
| 2.5 Confidence & Advertising .....                     | 6  |
| 2.6 Confidence Manipulation & Shifting Mechanisms..... | 7  |
| 2.7 Conceptual Model.....                              | 8  |
| CHAPTER 3: METHODOLOGY .....                           | 11 |
| 3.1 Participants.....                                  | 11 |
| 3.2 Manipulation & Procedure.....                      | 13 |
| 3.3 Choice of Statistical Test.....                    | 16 |
| CHAPTER 4: RESULTS .....                               | 18 |
| 4.1 Scale Assessment & Data Cleaning .....             | 18 |
| 4.2 Descriptive Statistics.....                        | 18 |
| 4.3 Bivariate Correlations .....                       | 18 |
| 4.4 Hypothesis Testing.....                            | 19 |
| CHAPTER 5: GENERAL DISCUSSION & IMPLICATIONS .....     | 21 |
| 5.1 Scale Assessment & Data Cleaning .....             | 21 |
| 5.2 Connection to Existing Literature .....            | 21 |
| 5.3 Implications.....                                  | 22 |
| 5.4 Limitations .....                                  | 23 |
| 5.5 Suggestions for Future Research.....               | 24 |
| CHAPTER 6: CONCLUSION.....                             | 26 |
| References.....                                        | 28 |
| Appendix A .....                                       | 34 |
| Appendix B .....                                       | 37 |
| Appendix C .....                                       | 38 |
| Appendix D.....                                        | 39 |
| Appendix E .....                                       | 40 |
| Appendix F .....                                       | 41 |
| Appendix G .....                                       | 42 |

## Table of Tables

|                                                                           |    |
|---------------------------------------------------------------------------|----|
| <b>Table 1.</b> Frequency and Percentage of Participants by Country ..... | 11 |
| <b>Table 2.</b> Bivariate Correlations Between Variables .....            | 18 |

## Table of Figures

|                                                                                                  |    |
|--------------------------------------------------------------------------------------------------|----|
| <b>Figure 1.</b> Conceptual Model of the proposed relationships .....                            | 9  |
| <b>Figure 2.</b> Fictional advertisement from the experiment (control group).....                | 14 |
| <b>Figure 3.</b> Fictional advertisement from the experiment (positive feedback condition) ..... | 14 |
| <b>Figure 4.</b> Fictional advertisement from the experiment (negative feedback condition).....  | 15 |

## CHAPTER 1: INTRODUCTION

Knowledge is an objective construct, yet confidence in knowledge is often built on superficial cues. Research by Rozenblit and Keil (2002) suggests that individuals tend to overestimate their understanding of complex phenomena until they are asked to explain them in detail, highlighting how surface-level familiarity can inflate perceived confidence. Manipulating confidence through feedback could potentially enhance the persuasive power of advertising, and, in turn, increase both sales effectiveness and purchase likelihood. For example, imagine that you are a skincare expert. Would receiving a message that boosts your confidence in your knowledge increase the likelihood of making a purchase? Alternatively, suppose it's your first time buying a skincare product. Would a message that gently lowers your confidence make the product seem more trustworthy or raise doubts? Answering this question could prove extremely viable for the marketing sector and marketers in general.

Marketing is a crucial process for any business that, according to Grönroos (2006), consists of creating, communicating and delivering value to customers. Moreover, the author also highlights that the core of marketing relies on understanding customer needs and integrating them to the company's strategy and operations. Advertising is, on the other hand, a key element of marketing, which Dahlen and Rosengren (2016) define as a "brand-initiated communication intent on impacting people" (p. 343). The term impact encompasses many elements such as visibility, persuasion, and sales, which can all be significantly boosted with the help of successful advertising campaigns (Dahlen & Rosengren, 2016). The above-mentioned skincare advertisement scenarios show how confidence in product knowledge could affect purchasing decisions. This research therefore aims to explore whether manipulating confidence can improve advertising effectiveness and offer insights for marketing strategies.

There is a limited amount of research about confidence available in the field of advertising and marketing. There are mentions online about marketing campaigns being more effective when they convey a sense of mastery and imply that consumers will be able to use the product with ease: for example, insights from Pop Neuro (2023), a neuromarketing platform that analyses how emotions like confidence influence consumer behaviour. However, there is a clear lack of academic articles supporting the matter, which makes the topic worth investigating.

This research will therefore dive into the manipulation of confidence in the marketing milieu to explore its impact on advertising. More specifically, it will investigate how participants with varying levels of marine life knowledge respond to different advertising

messages. The discussion will start with an extensive literature review that analyses relevant aspects of confidence manipulation that need to be taken into account before an experiment. Based on the literature, this thesis will further propose an accurate conceptual model in combination with relevant hypotheses that display the expected impact of confidence manipulation in advertising on willingness to buy. Finally, a research model, whose purpose will be examining the validity of each hypothesis, will be proposed. Hypotheses will then be examined based on the model, and conclusions will be drawn.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Marketing & Advertising**

Grönroos (2006) describes marketing as a customer-focused organisational process where firms build profitable relationships by creating mutual value through fulfilling promises. The author's definition puts an emphasis on understanding and supporting customer needs, organizational integration, as well as a long-term value approach that privileges creating relationships instead of focusing on immediate transactions. Concerning advertising, it is defined as a "brand-initiated communication intended to impact people" (p., 343; Dahlen & Rosengren, 2016). The authors underline that this definition takes into account three crucial shifts in advertising: Firstly, advertisers must adapt to a media environment where consumers engage with content across multiple channels. Secondly, consumers are no longer passive recipients of advertising messages. Instead, they actively seek, share, and even create content. Finally, advertising's impact is not limited to immediate sales and can have a significant influence on customers' attitude, brand perception, consumer relationships and societal norms. Abbas (2024) also highlights the importance of tailoring messages in advertising and underlines how personalization increased relevance, boosted conversion rates, and improved customer satisfaction.

### **2.2 The Elaboration Likelihood Model**

A well-known framework that dives into the concept of persuasion, a key element of advertising, is the Elaboration Likelihood Model (ELM), introduced by Petty and Cacioppo in 1986. The framework lists two primary routes through which persuasion can lead to attitude change: First, the central route, which involves careful processing and consideration of the content of a persuasive message. Processing information through the central route results in attitudes that are long-lasting and predictive of behaviour (Petty & Cacioppo, 1986). Second, the peripheral route, in which individuals rely on more superficial cues, such as attractiveness or credibility of the source. Taking this latter route usually results in attitudes that are both temporary and susceptible to change (Petty & Wegener, 1999). The latter article provides insight about how confidence can impact ELM processes. Specifically, the authors mention that thought confidence can influence the degree to which people rely on their own reasoning to form attitudes. For example, an individual who generates positive thoughts about a product and feels confident about them is as a result more likely to develop a favourable attitude. On the other hand, if they feel uncertain about the same thoughts, they will have less impact (Petty & Wegener, 1999).

## **2.3 Purchase Intention**

The theory of planned behaviour (TPB) suggests that a person's behaviour is driven by their intention to perform it, and was therefore developed to better predict and understand behaviours that are not entirely under volitional control (Ajzen, 1991). Within this framework, purchase intention is the most immediate and strongest predictor of actual purchasing decisions. The same author also underlines that it represents a consumer's readiness or plan to perform a behaviour, more specifically buying a product or service. This intention reflects the motivational factors that influence behaviour and also indicates, at the same time, how much effort a person is willing to put into purchasing something. The intention is therefore viewed as a cognitive manifestation of a consumer's commitment to buy (Ajzen, 1991). According to research by Spears and Singh (2004), purchase intention is often highly correlated with brand attitude. However, they are both two distinct terms, and marketers should craft more targeted messaging to convert positive attitudes into purchase motivation. Such an approach strengthens the predictive modelling of consumer decisions, according to the same authors.

In terms of measurement, purchase intention is usually assessed using self-report questionnaires in which items ask participants to rate statements, such as "I intend to buy [product name]". Those scales often use Likert formats, for example from 1 to 7, where 1 means "strongly disagree" and 7 means "strongly agree", or numerical scales, for example from 1 to 100, with a similar meaning. These measures are meant to capture the strength of the intention instead of the behaviour itself (Ajzen, 1991). In this thesis, purchase intention serves as the dependent variable of the experiment, representing the key outcome influenced by the proposed manipulation of confidence, a topic I turn to next.

## **2.4 Confidence & Overconfidence**

Dunning et al. (2004) define confidence as an individual's subjective beliefs in their abilities, knowledge, or judgements. Stankov et al. (2015) emphasize its role as a relatively stable and enduring characteristic of any human being and underline that its impact is significant in various fields of daily life as it can influence, for example, academic motivation and performance, initiative towards leadership roles, and is even associated with anxiety, depression, and avoidance behaviours. Overconfidence, on the other hand, occurs when there is a clear discrepancy such that an individual's self-perception is superior to their actual performance (Moore & Healy, 2008).

Stankov et al. (2015) suggested integrating confidence assessments into personality and decision-making studies. Over the years, various tools have been designed to measure confidence, including self-report questionnaires measuring respondents' belief in their own success capacities and self-assessment accuracy tools comparing individual judgment to their actual performance (Stankov et al., 2015). These tools have yielded a vast number of conclusions in terms of the displayed levels of confidence and its correlates in various life contexts: displaying excessive confidence in comparison to one's actual knowledge can result in inaccurate decisions and behaviour (Dunning et al., 2004). Issues include neglecting personal development, making judgment errors, decreasing productivity, and underestimating health risks (Dunning et al., 2004). In education, for example, a common manifestation is students overestimating their learning abilities: misjudging how quickly they can acquire new knowledge of the material, which results in ineffective study habits and preparation (Dunning et al., 2004).

Confidence's relevance is therefore not limited to a few, selected sectors. Indeed, given that it takes the form of a bias that is embedded in human nature, it might have a significant impact in any context where important decisions need to be made. One of the most famous biases related to excessive confidence is the Dunning-Kruger effect (Kruger & Dunning, 1999). Specifically, the authors underline that incompetent individuals lack the ability to evaluate their performance in an accurate manner. As a result, participants in the bottom quartile of performance tend to believe they perform above average (Dunning, 2011). Recent research by Lackner et al. (2023) refines our understanding of the Dunning-Kruger effect. Specifically, while Kruger and Dunning (1999) speculated that a minimal level of knowledge might be required for someone to become overconfident, their research did not demonstrate this directly with data. The newer study revealed that overconfidence peaks at intermediate levels of scientific knowledge. Individuals with moderate knowledge often overestimate their understanding, leading to incorrect answers and scepticism toward science (Lackner et al., 2023). Finally, past research also mentions the possibility of gender differences in confidence processing. Kempf et al. (1997) indicate that men and women exhibit different levels of confidence when processing advertising information. According to them, men tend to display higher confidence in their ability to process and evaluate content, while women often showcase lower confidence in their information processing capabilities.

In a previous research, Han et al. (2022) already measured the impact of consumer confidence on green purchase intention. Here, however, the confidence was not related to knowledge but to the vision respondents had about their financial situation in the near future

and how confident they were about it being positive. The authors found that higher consumer confidence was positively associated with green purchase intention, which meant that boosting consumer confidence could enhance sustainable consumption not only because consumers felt capable but also because it activated identity and value-based motivations.

## **2.5 Confidence & Advertising**

What is the interplay between confidence and advertising? Academic research points towards a bidirectional relationship. Firstly, according to Berger & Mitchell (1989), advertising can have a significant impact on an individual's degree of confidence: Specifically, consumers can develop greater confidence in their attitudes towards a product through greater ad exposure: the increase in confidence can then lead to stronger knowledge convictions and increase the likelihood of product purchase. Research by Zajonc (1980) provides insight into how advertising can influence a consumer's self-esteem and attitude confidence without the need for actual cognitive persuasion. The author identifies two processes relevant to this effect. First, stimuli that evoke positive feelings (which is often the goal in ads) and, second, repeated exposure to a stimulus, such as a product through an advertisement. The latter is tied to a phenomenon called the mere exposure effect, which shows that repeated exposure to a stimulus, in this context a brand or product, leads to enhanced liking and preference even without conscious recognition of this fact (Zajonc, 1980). Both these factors can increase the confidence in the consumer's attitudes, which results in them feeling more certain about their product preferences, even if they don't necessarily know it well and cannot justify the reasoning logically.

As a result, marketers can leverage emotional appeal and repeated exposure to increase the confidence consumers feel toward their choices, which can result in a rise in their purchase intentions. Additionally, Durgee (1986) investigated how advertisements that evoke positive self-reflection can lead to more favourable attitudes towards a product. This author defined the concept as "self-esteem advertising" and described it as an attempt to promote a product by triggering positive self-perception in consumers. His findings suggests that such an approach is especially effective when dealing with individuals that display low levels of self-esteem. Finally, Marks & Kamins (1988) observed that advertisements with moderate claims are more effective in enhancing belief strength and knowledge confidence in comparison to those with exaggerated claims, which can in turn lead to scepticism among customers. These authors also observed that experiencing a product sample before being

exposed to an advertisement results in higher confidence in comparison to the reverse sequence.

Academic research also highlights the relevance of the opposite effect: confidence influencing the effectiveness of advertising. Specifically, Bither & Wright (1973) underline that individuals with lower self-confidence are generally more susceptible to persuasive advertising in comparison to individuals who initially demonstrate higher self-confidence. This idea is further backed up by Barach (1969), who observed a positive correlation between low self-confidence and advertising effectiveness, especially in situations of high risk perception in customers' purchasing decisions. Moreover, men seem to benefit to a greater extent from messages that appeal to their believed expertise, while women might require more supportive information and reassurance. Barach (1969)'s research highlights that women facing higher perceived risks in their purchasing decisions are more susceptible to persuasive advertising. Furthermore, Bither & Wright (1973) also found that the relationship between confidence and advertising effectiveness can be significantly impacted by the level of distraction. According to them, individuals displaying high levels of self-confidence become more susceptible to advertising messages under high-distraction conditions. The authors therefore recommend to select media channels that specifically align with the desired level of distraction depending on the type of customer.

In general, the conclusion across all the previous articles is that tailoring an advertisement depending on the type of customer is a key factor to consider during product campaigns. Again however, there is no research connecting this to confidence manipulation, despite the fact that the degree of confidence can vary from customer to customer. The above-mentioned literature does, however, suggest that adapting an advertisement depending on a potential customer's confidence degree could be an effective strategy worth exploring.

## **2.6 Confidence Manipulation & Shifting Mechanisms**

Rozenblit and Keil's (2002) findings on confidence discrepancies and cognitive biases suggest a third potential way that confidence may influence consumer behaviour in advertising: through confidence manipulations. The authors underline that the discrepancy between excessive confidence and actual knowledge is strongly tied to cognitive biases, such as relying on familiarity and surface-level cues to judge understanding. The more familiar an individual gets with a topic, the higher the likelihood of exhibiting overconfidence, highlighting the gap between perceived and actual knowledge. Most importantly, the authors also provide a suggestion of how to control the degree of confidence: asking for a detailed

explanation of a phenomenon. Indeed, an individual's confidence tends to decrease as he realises how limited his understanding is (Rozenblit & Keil, 2002).

Additionally, a study from Kulhavy et al. (1976) showcases that feedback engages participants in reflecting on their understanding and is therefore a very effective tool in confidence manipulation. However, it is important to underline that, in order to maximise its effectiveness, it's important to create an environment where a learner's initial beliefs do not align with the correctness of his responses. Such a discrepancy encourages cognitive reassessment and can therefore enhance learning. This is further supported by Moore and Healy (2008), whose research underlines that limited (or the lack of) feedback can intensify overconfidence, as individuals fail to learn from their mistakes. Additionally, feedback is significantly more effective when delivered immediately (instead of being delayed), as it leads to a higher retention of accurate information (Kulhavy et al., 1976). The previous findings are backed up by Arkes et al. (1987), who observed that feedback helped participants in calibrating their confidence levels, as long as it was accurate and specific. According to the same research, feedback also turned out to be more effective when it was immediate, specific, and took place in tasks with clear right or wrong answers. These characteristics support the idea of phrased feedback, expressed through brief, carefully worded short sentences that signal correctness or incorrectness, instead of only relying on a binary right/wrong label. Finally, another phenomenon observed by the authors was a decrease in overconfidence for participants that were asked to think about reasons why their answer could be wrong, which also goes in line with Rozenblit & Keil (2002)'s findings. In this thesis, confidence is the main psychological construct manipulated through feedback to assess its effect on willingness to buy.

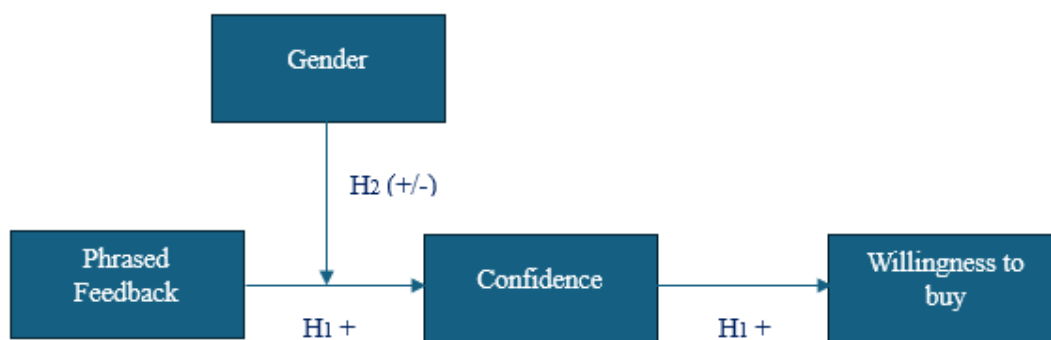
## **2.7 Conceptual Model**

The present study investigates how manipulating confidence through feedback may affect advertising effectiveness. Specifically, it explores whether phrased feedback about one's knowledge can alter willingness to buy a fictional product when paired with an advertisement aligned with the respondent's quiz outcome.

Phrased feedback serves as the independent variable of the experiment. The aim of the variable is to put respondents in three separate groups, with two of them providing either positive or negative feedback to a respondent depending on their knowledge, in addition to one control group in which respondents receive no feedback at all.

Willingness to buy serves as the dependent variable of the research. The purpose of the variable is to demonstrate how both the process and consequences of a confidence manipulation, through providing feedback, can impact a customer's willingness to buy after exposure to an advertisement.

Figure 1 presents the conceptual model developed for this study, which displays the proposed relationships between the independent and dependent variables, as well as the moderating role of gender:



**Figure 1**

*Conceptual Model of the proposed relationships.*

Created by the author.

Given evidence on human sensitivity to phrased feedback (Kulhavy et al., 1976) and its proven impact on knowledge confidence (Arkes et al., 1987), feedback about one's knowledge is expected to significantly influence willingness to buy. As a result, consumers who receive either positive or negative feedback about their general knowledge and are subsequently exposed to an advertisement tailored to their displayed level of expertise will show higher willingness to buy the same product:

**H<sub>1</sub>:** The mean willingness to buy will differ between groups as a consequence of phrased feedback, with willingness to buy being highest in the feedback conditions and lowest in the control group.

Confidence processing can vary depending on one's gender: men benefit more from messages that appeal to their believed expertise, while women require more supportive information and reassurance (Kempf et al., 1997). Thus:

**H<sub>2</sub>:** In the feedback conditions, the mean willingness to buy will differ significantly between genders. Women will display higher numbers in comparison to men in the negative-feedback condition, while men will display higher numbers than women in the positive-feedback condition.

## CHAPTER 3: METHODOLOGY

### 3.1 Participants

One-hundred-seventy-nine participants from various origins and backgrounds were subjected to an online questionnaire through Qualtrics. One-hundred-seventy-one of them answered each question until the end. The remaining eight were only accounted for the answers they did provide. Additionally, eight other participants failed the experiment's attention check. Their answers were therefore not taken into account when analysing data and computing results. The sample nevertheless proved to be extremely diverse in terms of demographics. Participants came from 28 different countries, with the largest groups being from Poland (27.5%), Belgium (21.1%), and Italy (7.0%). Moreover, the sample consisted of both young adults as well as senior people, with an average age of  $M = 35.75$ ,  $SD = 15.40$ . Finally, 76 participants (44.4%) identified as male, while 91 (53.2%) identified as female. Three participants opted not to share their gender and one identified as non-binary. A complete list of nationalities can be seen in Table 1.

**Table 1**  
*Frequency and Percentage of Participants by Country*

| Country      | Frequency | Percent (%) |
|--------------|-----------|-------------|
| Albania      | 1         | 0.6         |
| Argentina    | 1         | 0.6         |
| Austria      | 1         | 0.6         |
| Belgium      | 36        | 21.1        |
| Brazil       | 2         | 1.2         |
| Burkina Faso | 1         | 0.6         |
| Colombia     | 1         | 0.6         |
| Congo        | 1         | 0.6         |
| Croatia      | 3         | 1.8         |
| Denmark      | 2         | 1.2         |
| Ecuador      | 1         | 0.6         |
| Egypt        | 2         | 1.2         |
| Finland      | 1         | 0.6         |
| France       | 7         | 4.1         |
| Germany      | 11        | 6.4         |
| Hungary      | 1         | 0.6         |
| Italy        | 12        | 7.0         |
| Luxembourg   | 1         | 0.6         |
| Malta        | 1         | 0.6         |

| <b>Country</b>                                       | <b>Frequency</b> | <b>Percent (%)</b> |
|------------------------------------------------------|------------------|--------------------|
| Netherlands                                          | 9                | 5.3                |
| Poland                                               | 47               | 27.5               |
| Portugal                                             | 11               | 6.4                |
| Romania                                              | 1                | 0.6                |
| Spain                                                | 9                | 5.3                |
| Ukraine                                              | 2                | 1.2                |
| United Kingdom of Great Britain and Northern Ireland | 3                | 1.8                |
| United States of America                             | 1                | 0.6                |
| Vietnam                                              | 2                | 1.2                |
| <b>Total</b>                                         | <b>171</b>       | <b>100.0</b>       |

To gather participants, one of the most popular non-probability sampling design methods was used: snowball sampling. The method consists of starting with a small number of initial contacts (so-called “seeds”), to whom the experiment is initially forwarded by the researcher. The participants are then asked to forward it to other contacts who fit the research, who in turn recommend the survey to other potential respondents (Parker et al., 2019). In this specific case, the link to participate in the experiment was shared publicly through platforms such as Instagram, Facebook, and LinkedIn. No reward or monetary incentive was offered to participants in exchange for completing the survey. Additionally, closer acquaintances of the researcher were asked to fill the survey and share it on their own social media. Such a sampling method is commonly used during experiments due to its networking characteristics. However, as much as it offers high levels of flexibility, it also increases the risk of selection bias, given that the sample is initially dependent on the researcher’s personal resources and contacts (Parker et al., 2019).

The questionnaire was published on March 8<sup>th</sup>, 2025, and data collection was discontinued on March 13<sup>th</sup>, 2025, once a minimum of 30 participants for each condition was reached. Responses recorded after that date were not taken into consideration. Detecting a moderate effect size ( $d = .50$ ) with 80% power at an  $\alpha$  level of .05 (two-tailed) typically requires approximately 64 participants per condition (Faul et al., 2007). However, the collection of participants came with one significant drawback: respondents were not allocated to each of the three conditions equally. Indeed, in the second condition, being subjected to positive or negative feedback depended on whether a respondent provided the correct answer to a multiple-choice question. Given that there were 4 available answers, a respondent with

no marine life knowledge had only a 25% probability to be allocated to the positive feedback condition. To proceed efficiently with data analysis, a minimum requirement of 30 participants per condition was therefore chosen, following the central limit theorem (CLT). The central limit theorem states that the larger a sample, the more the sampling distribution of the sample mean approximates a normal distribution – typically, a sample size of 30 or more is considered sufficient for the CLT to begin to apply (Sharpe et al., 2018). Such an approach increased the likelihood of satisfying the normality assumption. In the end, after close monitoring of the incoming flow of responses, the goal of minimum 30 participants per condition was satisfied, and even largely exceeded for the majority of the conditions.

### **3.2 Manipulation & Procedure**

A one-factorial between-subjects design with three levels (no feedback vs. positive feedback vs. negative feedback) was employed. First, every participant was instructed to respond to a declaration of consent. In case the response was negative, they were automatically sent to the end of the experiment. Next, at the very beginning of the survey, respondents were subjected to a multiple-choice, general knowledge question, and were told to select the most accurate answer possible. The question posed was: “How many marine species have scientists found and named so far?”. The selection of available answers included: 19 000, 64 000, 123 000, and 220 000, with the last one being correct (Ocean Sensus, 2023). Then, participants were randomly allocated to the control or feedback condition. The control group received no feedback at all, no matter whether a respondent answered correctly or not, and was immediately exposed to an advertisement. The advertisement showcased a full-face snorkelling mask from a fictional company called “Jet-Plum” and incentivised customers to explore marine life. At the bottom of the image, a slogan was included, which stated: “Immerse yourself in the magic of the underwater world with the best snorkelling mask on the market” (see Figure 2).



**Figure 2**

*Fictional advertisement from the experiment (control group).*

Created by the author.

Participants allocated to the second condition, on the other hand, received feedback. In case the correct answer was selected, an additional message appeared prior to the advertisement and stated: “Your answer is correct! Great job! In fact, while approximately 240,000 marine species have been discovered and named, scientists estimate that millions more remain unexplored beneath the ocean’s surface. The deep sea holds countless mysteries still waiting to be uncovered”. After being provided with feedback, participants were exposed to the same snorkelling mask advertisement as the control group, albeit with one significant change. The slogan at the bottom of the image was now longer and stated: “Passionate about marine life? We deliver an underwater experience designed with your needs in mind - where captivating sights and comfort exceed expectations. Immerse yourself in the magic of the underwater world with the best snorkelling mask on the market” (see Figure 3).



**Figure 3**

*Fictional advertisement from the experiment (positive feedback condition).*

Created by the author.

A similar approach was established whenever any of the three incorrect answers was selected. Specifically, participants were first exposed to the additional message stating: “That’s incorrect. Approximately 240,000 marine species have been discovered and named, and experts believe that millions more are yet to be found. The ocean remains one of the least explored places on Earth, hiding many treasures of biodiversity beneath its depths”. Next, the snorkelling advertisement was displayed, with the slogan now being: “New to exploring marine life? Trust our expertise - we’ll provide everything you need for a comfortable and captivating experience! Immerse yourself in the magic of the underwater world with the best snorkelling mask on the market” (see Figure 4).



**Figure 4**

*Fictional advertisement from the experiment (negative feedback condition).*

Created by the author.

In both cases, the goal of the additional sentence in the slogan was to make respondents feel that their level of knowledge was acknowledged by the company and that the advertised product was in line with their expertise. Moreover, the text font and its size were identical for each advertisement. Such a measure lowered the risk of random error or other external factors impacting the results of the experiment. Finally, whenever an advertisement was displayed, participants had to wait a minimum of 8 seconds before being able to move on to the next part of the survey. The goal behind this time limit was to incentivize each participant to carefully look at the ad and minimize the risk of inaccurate responses resulting from not reading parts of the slogan. The longest slogan contained 45 words and, with an average reading speed of 238 words per minute (Brysbaert, 2019), this implied that around it should take around 11 seconds to read it entirely. The chosen limit was

set slightly lower in order to avoid confusing faster readers, for example by making them think that the survey stopped working.

Next, each respondent's purchase intentions were measured on a scale from 0 to 100, where 0 meant "not likely at all" and 100 meant "extremely likely". The measure was conducted on a 3-item scale adopted from Ajzen (2006), which was designed based on principles of the theory of planned behaviour. Specifically, the thesis followed the principle that likelihood constructs should be evaluated using multiple items on numerical scales (Ajzen, 2006). The 3 items measured on the scale were: "I would like to buy a Jet-Plum snorkelling mask", "I am interested in purchasing a Jet-Plum snorkelling mask" and "I plan to purchase a Jet-Plum snorkelling mask".

After being asked to share their purchase intentions, respondents were subjected to an attention check inspired by Curran & Hauser (2019): according to their findings, traditional attention checks often instruct participants to select a specific answer without much thought, in order to ensure that they are paying attention. Taking this principle into account, the attention check consisted of asking respondents to identify the option that was significantly distinctive from a list of otherwise similar items. The list in the experiment consisted of the following options: dolphin – shark – banana – sea turtle. Once this step was done, participants were asked to indicate both their interest and experience in snorkelling (or similar activities) on a 1-5 Likert scale. Finally, the survey ended with the collection of elementary demographic data, such as gender, nationality, and age.

### **3.3 Choice of Statistical Test**

To properly examine H1, which stated that the mean willingness to buy will differ between groups as a consequence of phrased feedback, a one-way ANOVA test was run between the overall likelihood of purchasing and the three feedback groups. The purpose of a one-way ANOVA is to test a metric variable (interval or ratio) against more than two non-metric (nominal or ordinal) variables (Hair et al., 2021). The following test was chosen as the likelihood of purchasing was a metric variable, and participants were divided into three separate groups. The test was performed in SPSS, to examine whether the mean likelihood of purchasing differed between respondents exposed to three distinct types of feedback.

For H2, which stated that the mean willingness to buy will differ significantly between genders in the feedback conditions, a moderation was tested using PROCESS Model 1 in SPSS (Hayes, 2018), to examine whether the mean willingness of buying differed between genders in the positive and negative-feedback conditions. This test was chosen given

that moderation is used to examine whether the strength or direction of the relationship between the independent and dependent variables depend on a third variable, known as the moderator. In this case, gender served as the moderator. Respondents allocated to the control condition were filtered out of the dataset during this test, to ensure that moderation contrasted only the positive and negative feedback conditions. This resulted in 74 participants being subjected to the analysis.

## CHAPTER 4: RESULTS

### 4.1 Scale Assessment & Data Cleaning

A scale assessment was performed for the three purchase intentions items. Given that the measurement took place in three distinct conditions, Cronbach's  $\alpha$  was calculated for the control group and both the positive feedback and negative feedback scenario. In general, the closer the result gets to 1, the higher the internal consistency of the scale items. A Cronbach's  $\alpha$  of .7 or higher is usually considered acceptable for research purposes (Bland & Altman, 1997). The assessment resulted in a Cronbach's  $\alpha$  of .92 for the control group, .88 for the positive feedback group, and .92 for the negative feedback group. Given that each result indicates a high reliability ( $> .7$ ), mean scale scores were computed for further analysis. A copy of the SPSS output is provided in the Appendix. No analysis was further performed using only the individual items that were part of the scales.

In each condition, purchase intentions that happened to be over 2.00 standard deviations over the mean were classified as outliers and not taken into account when performing statistical tests. Visual inspection of the histogram for purchase intention showed a roughly symmetrical distribution with slight skewness, suggesting that the normality assumption was reasonably met.

### 4.2 Descriptive Statistics

After removing outliers, the overall mean likelihood of purchasing was  $M = 30.52$ ,  $SD = 21.77$ . Additionally, respondents' mean reported experience in snorkelling and similar activities (1 - 5 scale) reached  $M = 2.01$ ,  $SD = 1.27$ , while their reported interest in snorkelling and similar activities stood at  $M = 2.60$ ,  $SD = 1.34$ . To examine the relationships between key variables, bivariate correlations were computed (see Table 2).

### 4.3 Bivariate Correlations

**Table 2**  
*Bivariate Correlations Between Variables*

| Variables                                  | 1    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|--------------------------------------------|------|---|---|---|---|---|---|---|---|----|----|
| 1. Males †<br>$n = 167$ .                  | —    |   |   |   |   |   |   |   |   |    |    |
| 2. Belgian<br>nationality †<br>$n = 171$ . | -.01 | — |   |   |   |   |   |   |   |    |    |

|                                                       |       |        |       |      |       |        |        |        |      |       |   |
|-------------------------------------------------------|-------|--------|-------|------|-------|--------|--------|--------|------|-------|---|
| 3. Polish nationality<br>†<br><i>n</i> = 171.         | -.13  | -.32** | —     |      |       |        |        |        |      |       |   |
| 4. Age<br><i>n</i> = 170.                             | .08   | .46**  | -.07  | —    |       |        |        |        |      |       |   |
| 5. Purchase Likelihood<br><i>n</i> = 156.             | -.08  | .02    | .08   | -.02 | —     |        |        |        |      |       |   |
| 6. Correct Answer Quiz †<br><i>n</i> = 171.           | -.01  | .02    | .12   | .15  | .13   | —      |        |        |      |       |   |
| 7. Control Condition †<br><i>n</i> = 171.             | -.15* | -.07   | -.04  | -.07 | .11   | .01    | —      |        |      |       |   |
| 8. Correct Condition †<br><i>n</i> = 171.             | .11   | -.05   | .13   | .08  | .05   | .57**  | -.44** | —      |      |       |   |
| 9. Incorrect Condition †<br><i>n</i> = 171.           | .05   | -.12   | -.03  | .04  | -.17* | -.48** | -.57** | -.27** | —    |       |   |
| 10. Underwater Experience<br><i>n</i> = 171.          | .09   | .15*   | -.10  | .16* | -.05  | .04    | -.06   | -.09   | .16* | —     |   |
| 11. Interest Underwater Activities<br><i>n</i> = 171. | .04   | -.01   | -.15* | -.08 | .18*  | .04    | .08    | -.11   | .02  | .70** | — |

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*Note.* *Ns* vary between 156 and 171.

† denotes a variable that is dummy coded with the name of the variable denoting the group defined as 1.

\*  $p < .05$ . \*\*  $p < .01$ .

#### 4.4 Hypothesis Testing

For H1, a test of homogeneity of variances was conducted in addition to the one-way ANOVA, to examine whether equal variances can be assumed. This led to a Levene statistic of 1.85 and a *p*-value of .161. The following result is not significant and thus implies equal variances can safely be assumed.

The main effect of the one-way ANOVA was not significant,  $F(2, 153) = 2.32$ ,  $p = .102$ , suggesting no difference between the means of the three purchase likelihood conditions. The analysis was conducted a second time with demographics (age and nationality) as

covariates (i.e., a one-way ANCOVA), with no significant change occurring: the main effect of condition was not significant,  $F(2, 150) = 2.24, p = .110$ .

Additionally, the control group mean was also contrasted with each of the feedback conditions in turn. For the control group and positive-feedback group contrast, this resulted in  $t = -0.02$  and a p-value of .985. For the control group and negative-feedback group contrast, this led to  $t = -2.06$  and a p-value of .041. Results therefore showcase that the mean purchase likelihood is significantly lower in the negative-feedback condition in comparison to the control group. Nevertheless, as the one-way ANOVA did not yield a statistically significant effect, and given that purchase intention was actually lower in one of the feedback conditions compared to the control, H1 was not supported. Copies of all relevant SPSS outputs are provided in the Appendix.

For H2, the PROCESS Model 1 output revealed a non-significant interaction between feedback and gender of  $b = -0.07, SE = 7.43, t(70) = -0.01$ , with a p-value of .993. The moderation therefore does not support gender influencing the effect of feedback on likelihood of purchasing. Again, the analysis was conducted a second time with demographics (age and nationality) as covariates, resulting in an interaction between feedback and gender of  $b = 4.02, SE = 7.79, t(67) = 0.52$ , with a p-value of 0.607 ( $> 0.05$ ). Thus, as the analysis revealed no statistically significant interaction between feedback and gender, H2 was not supported.

## **CHAPTER 5: GENERAL DISCUSSION & IMPLICATIONS**

### **5.1 Summary of Results**

The experiment showcased a general lack of customer sensitivity to confidence manipulation through feedback, and no difference between genders has been identified. However, messages given to individuals with lower levels of domain knowledge were less effective compared to both non-personalised ads and messages adapted to customers with high levels of knowledge. In this context, the negative attitude towards the negative-feedback condition may be explained by the fact that people do not like to be told they are wrong. Research in psychology showcases that negative feedback often leads to defensiveness, dissatisfaction, and rejection instead of an openness to improvement (Steelman & Rutkowski, 2004). Given that customers, and not sellers, hold buying power, they may express dissatisfaction by exercising that power and choosing not to purchase.

### **5.2 Connection to Existing Literature**

This above-mentioned hypothesis is supported by Kim and Baker (2020), who found that when customers are corrected or challenged, it can lead to increased tension and dissatisfaction, highlighting the delicate nature of customer interactions. Additionally, the findings align, to some extent, with Dunning et al. (2004), who noted that overconfident individuals are more likely to make poor decisions. In this case, their overconfidence could have led to them resisting or showing disinterest when their knowledge was challenged, no matter their initial level of appreciation towards the advertised product. The results also support Moore and Healy (2008), who highlighted that individuals with low levels of knowledge can still feel highly confident, which is precisely what seems to have happened in the negative-feedback condition, where knowledge-tailored ads backfired. Research by Durgee (1986) is also consistent with this interpretation. Specifically, the author found that ads which boost self-esteem are more effective. Here, the opposite effect occurred: negative feedback, followed by a tailored advertisement, diminished respondents' self-esteem and, as a result, reduced its effectiveness.

On the other hand, the absence of significant gender differences does not support findings by Kempf et al. (1997), who suggested that men and women differ in how confidence influences ad response. Kempf et al.'s study was nevertheless conducted with a more homogeneous sample, which might have amplified gender effects. This thesis' experiment collected participants across 28 nationalities, with a majority coming from Poland and Belgium. It also goes against Barach (1969), who claimed that women are more likely to

respond to ads under uncertain conditions. In his work, however, the sample was also culturally homogeneous and likely North American. Such a drastic difference in cultural dimensions might influence the relationship between gender, feedback, and persuasion. Additionally, Barach's study focused mostly on everyday products such as coffee or shampoo, while this experiment used snorkelling gear, which could carry different perceived importance and risk: especially that many consumers who are unfamiliar with the water environment might be scared of snorkelling or scuba diving. Finally, the advertising style, as well as the methods of diffusion, have changed significantly since 1969 and 1997, which might be a final reason explaining the divergence in the results.

### **5.3 Implications**

Findings suggest that an effective campaign is not always about sharing information, or even honesty. The motto "the customer is always right" seems especially relevant here. In fact, one could argue that customers are always right, even when they are wrong. A study from Huang & Ho (2023) already explored how retail businesses can benefit from adopting pro-customer attitudes: specifically, the authors underline that proactively validating customer's feelings and addressing their concerns boost retention and relational value. Still, companies must often deal with customers with imperfect knowledge. Results suggest that advertising tailored to this segment should be approached with extreme care. A recommendation for marketers would therefore be to avoid referencing customer knowledge in any advertisement or interaction, unless the customer explicitly asks for it. Otherwise, providing feedback could backfire. In broader terms, when engaging with a customer who appears less confident, feedback should also be delivered discreetly. At no point should the customer feel that the seller is exploiting their insecurity during the experience. However, this approach has its drawbacks. Research shows that always siding with customers, even when they're wrong, can demoralise employees and negatively affect service quality (Catherine et al., 2017). Past research also supports the idea that giving participants clear performance standards, such as benchmarks or explicit feedback on the expected accuracy, may help them in more accurately calibrating their confidence (Nederhand et al., 2019). Such a strategy could subsequently increase the effectiveness of tailored ads. Instead of offering direct negative feedback, sellers could nudge the customer into asking for more information, by gently guiding them toward relevant products from the brand or towards specific points-of-information.

## 5.4 Limitations

Despite the main effect not being significant, follow-up comparisons were still conducted between the control group and each feedback condition. While this helped provide more context to the direction of the results, it also comes with the risk of inflating the type I error rate. In this case, looking at the main effect plus two group comparisons adds up to three tests, which means the actual chance of a false positive increases to around 15% (Cramer et al., 2016). Although the contrasts were theoretically grounded, the approach does stretch the usual statistical practice, and should therefore be interpreted with caution. Additionally, the structure of the experiment, where respondents were allocated based on their quiz answers, made the final distribution very uneven. While there was a random attribution to the control and advertisement group, it was not possible to control how many people received each type of feedback, as that depended on their actual knowledge level. This resulted in a relatively small sample for the positive feedback condition: for H2, the large standard errors suggest variability in the data and may reflect limitations related to sample size. Additionally, the number of participants of each gender within each feedback condition was below the recommended minimum of 30 needed to reliably invoke the central limit theorem.

Finally, while the list of nationalities among respondents is extensive, 53% of them come either from Poland or Belgium. This is a consequence of snowball sampling, as most of the researcher's network came from those two countries. As a result, the experiment does not provide an accurate representation of the worldwide population. Nevertheless, past research has also shown that confidence can vary across cultures: for example, Indians tend to believe they perform better than they actually did more often than Americans, Hong Kong Chinese, and Japanese participants (Moore et al., 2018). Such cultural differences in self-assessment suggest that baseline confidence levels, and the ways individuals interpret performance-related information, can be influenced by cultural norms and expectations. Since the remaining 47% of the study's sample consists of respondents from 26 other countries with significantly different cultures and traditions, their cultural tendencies might have impacted their overconfidence and shaped how they reacted to feedback, which potentially affected the extent to which confidence manipulation had an effect on purchase intention. Additionally, although results in general seem reliable, some respondents did not answer all the scale elements in the purchase intentions section. For those specific cases, the average score for the scale was calculated based on the answers they did provide.

## 5.5 Suggestions for Future Research

A suggestion for future research would be to make consumers aware of their knowledge gaps (or high levels of knowledge) in a more subtle way, instead of explicitly telling them that their answer was correct or incorrect. One possible approach could involve removing feedback entirely and increasing the number of questions included in the experiment. Over time, a consumer who answers a larger set of questions (e.g., 10 to 20) and finds most of them difficult may subconsciously realise that a gap in knowledge exists (Pulford & Colman, 1997). Similarly, if they answer without a lot of hesitation, they may gain confidence in their existing knowledge. This also suggests that the time a respondent takes to answer might be an important variable for future studies.

On the opposite end of the spectrum, research could explore whether using a more humorous tone to signal low knowledge would lead to more favourable reactions. Kale and Sayin (2022) already found that self-deprecating advertisements, in which brands highlight some of their minor flaws with humour, can actually increase brand trust and reduce ad avoidance. However, this mostly occurs when the flaw is trivial and does not have any significant impact on the use of the product. In addition, future studies could also measure emotional responses in order to better understand why negative feedback in tailored advertising fails, and more specifically, which emotional reactions contribute to consumers responding in a resistant manner. Is the reaction driven by irritation, embarrassment, or defensiveness? For example, irritation, a form of annoyance triggered by marketing efforts, was found to significantly reduce purchase intention (Coyle, 2024). Understanding the emotional mechanism behind this type of response would support the development of more effective ad strategies that avoid triggering those reactions altogether.

Further research could also investigate whether personalised feedback affects long-term brand perception, rather than only immediate purchase intentions. In the present experiment, participants were exposed to a fictional brand with no initial familiarity. However, it remains unclear how the results might differ if consumers were already familiar with the brand, liked its products, and trusted its messages. In that context, would direct feedback, positive or negative, have a different impact? Finally, an additional research idea could involve examining whether the observed resistance to negative feedback, and the resulting lower willingness to purchase, is specific to certain product categories. This study focused on general consumer goods within a niche marine life context. Future work could assess whether similar patterns emerge in other sectors, such as technology, finance, or

healthcare. Healthcare may be especially relevant, particularly when feedback concerns a person's well-being or physical condition.

Finally, previous research examining how effective a company's reply to customer feedback is shows that both negative feedback itself and reactions to it may be more complex than they initially appear. Specifically, Zheng et al. (2020) found that a single generic response template does not work. Instead, the effectiveness of a company's reply depends on how close people feel to the situation: if it concerns them directly or not, and whether the product is pleasure or function-oriented. For example, when customers feel close to the complaint, they respond more positively when the company addresses the product's main or primary features. On the contrary, when customers feel more distant from the complaint, they react better when the company highlights secondary or additional features. Similarly, for pleasure-oriented products, consumers are more sensitive to emotional aspects such as taste, joy, and indulgence, so responses need to emphasise these elements. For utilitarian products, however, consumers care more about practical aspects such as reliability and functionality, meaning responses should be factual and reassuring (Zheng et al., 2020). It would therefore be interesting to examine whether a comparable logic applies in an individual's mind when it is the company itself providing customers with feedback about product knowledge, similarly to the experiment in this thesis.

## CHAPTER 6: CONCLUSION

The primary objective of this thesis was to examine whether manipulating confidence through feedback could generate a positive impact in marketing. It began by presenting key insights related to knowledge confidence, purchase intention, advertising, feedback, and confidence manipulation, as well as how these elements interact. This review justified the formulation of two hypotheses: one focusing on the effectiveness of confidence manipulation via feedback, and the other on potential gender differences in the phenomenon.

Feedback was not found to significantly impact willingness to buy. Additionally, no meaningful difference between gender was identified. However, the experience highlights a possible pattern: consumers tend to distance themselves from negative feedback, even when its purpose is to help deliver a more relevant advertisement. This points to the need for further exploration in this area and supports the idea that, especially when dealing with individuals who show lower levels of knowledge, consumers may need to be approached with more care and sensitivity. Due to buying power, marketing isn't always about telling the truth: it's about telling consumers what they want to hear.

This leaves marketers in a difficult situation: Consumers do not enjoy being told that their understanding of a subject is imperfect, yet businesses frequently have to deal with clients who don't fully understand their needs. The findings therefore imply that advertising targeted at this market should be handled very carefully. Therefore, unless the consumer specifically requests it, marketers are advised to refrain from commenting on customer knowledge during promotional activities. In general, feedback should be given discreetly while interacting with a client who seems less informed. Throughout the transaction, the buyer should never feel as though the vendor is taking advantage of their ignorance.

The result, however, comes with one significant limitation: looking at the main effect alongside two group comparisons adds up to three tests, which increases the actual chance of a false positive to around 15%. It is therefore important to replicate this study, as the observed effects may be the result of chance rather than a stable phenomenon. Additionally, it would be recommendable in future research to measure emotional responses, in order to better understand why negative feedback in confidence-based advertising might fail, and which emotional reactions specifically contribute to this resistant response. This research suggestion is crucial, as any significant findings in this area would carry major implications in terms of advertising ethics. The negative consumer response to feedback-based advertising implies that, in some cases, the most effective solution might involve not telling consumers the full truth: a strategy that inevitably raises ethical concerns. Any effect in this space should

therefore be interpreted with caution and handled with care, as the ethically optimal solution may not be straightforward.

The thesis is concluded with a final suggestion of investigating whether confidence manipulation through feedback could affect long-term brand perception. While in this experiment participants were exposed to a fictional and completely new brand, their reluctance to negative feedback could potentially shift once they are exposed to a brand they know or already have a positive affect towards.

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## **APPENDIX A – RECONSTRUCTION OF FULL SURVEY QUESTIONNAIRE**

### **Introduction & Declaration of Consent**

Welcome, and thank you for considering participating in this experiment. My name is Robin Craps, and I am conducting this study as part of my Master's thesis at the Faculty of Human Sciences of Universidade Católica Portuguesa, under the supervision of Prof. Cristina Mendonça. This research explores consumer behaviour and involves answering several closed-ended questions, which will take less than 5 minutes to complete.

Your participation in this study is entirely voluntary. You may withdraw at any time by closing the survey page. If you have any questions or concerns, please contact me at: s-rcraps@ucp.pt.

☐ I consent

☐ I do not consent

### **Marine Life Quiz**

Question:

How many marine species have scientists discovered and named so far?

- 19,000

- 64,000

- 123,000

- 220,000

### **Feedback Conditions & Advertisements**

Control Group:

Participants are shown an advertisement for a snorkeling mask without receiving any feedback on the quiz question.

Condition 1 - Correct Answer (Positive Feedback):

"Your answer is correct! Great job! In fact, while approximately 240,000 marine species have been discovered and named, scientists estimate that millions more remain unexplored beneath the ocean's surface. The deep sea holds countless mysteries still waiting to be uncovered."

Condition 2 - Incorrect Answer (Negative Feedback):

"That's incorrect. Approximately 240,000 marine species have been discovered and named, and experts believe that millions more are yet to be found. The ocean remains one of the least explored places on Earth, hiding many treasures of biodiversity beneath its depths."

### **Product Advertisement**

Participants view an advertisement for a fictional snorkelling mask brand (Jet-Plum) and then respond to the following items.

Please indicate your agreement with the following statements on a scale from 0 (Strongly Disagree) to 100 (Strongly Agree):

1. I would like to buy a Jet-Plum snorkelling mask.
2. I am interested in purchasing a Jet-Plum snorkelling mask.
3. I plan to purchase a Jet-Plum snorkelling mask.

### **Attention Check**

Select the item that does not belong in the list:

- Dolphin
- Shark
- Banana
- Sea turtle

## **Experience & Interest**

Please indicate the extent to which the following statements describe you, using a scale from 1 (Does not describe me) to 5 (Describes me extremely well):

1. I am experienced in snorkelling, scuba diving or similar underwater activities.
2. I am interested in snorkelling, scuba diving and similar underwater activities.

## **Demographic Questions**

What gender do you identify with?

- Male
- Female
- Non-binary / Third gender
- Prefer not to say

What is your age?

What is your nationality?

## **Comments or Feedback (Optional)**

Do you have any comments or feedback you would like to share?

## APPENDIX B - RELIABILITY TESTS FOR LIKELIHOOD OF PURCHASING

### Scale: Control\_Group\_Scale

#### Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|----------------------------------------------|------------|
| .915             | .915                                         | 3          |

### Reliability

### Scale: Correct\_Group\_Scale

#### Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|----------------------------------------------|------------|
| .884             | .887                                         | 3          |

### Reliability

### Scale: Incorrect\_Group\_Scale

#### Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|----------------------------------------------|------------|
| .915             | .917                                         | 3          |

## APPENDIX C - ONE-WAY ANOVA (H1)

### Oneway

#### Descriptives

Willingness\_FINAL

|       | N   | Mean    | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Minimum | Maximum |
|-------|-----|---------|----------------|------------|----------------------------------|-------------|---------|---------|
|       |     |         |                |            | Lower Bound                      | Upper Bound |         |         |
| 1.00  | 82  | 32.3110 | 23.56333       | 2.60213    | 27.1335                          | 37.4884     | .00     | 83.67   |
| 2.00  | 30  | 32.2222 | 18.57543       | 3.39139    | 25.2860                          | 39.1584     | 1.67    | 64.33   |
| 3.00  | 44  | 23.9697 | 19.93193       | 3.00485    | 17.9098                          | 30.0296     | .00     | 70.00   |
| Total | 156 | 29.9412 | 21.88662       | 1.75233    | 26.4797                          | 33.4028     | .00     | 83.67   |

#### Tests of Homogeneity of Variances

|                   |                                      | Levene Statistic | df1 | df2     | Sig. |
|-------------------|--------------------------------------|------------------|-----|---------|------|
| Willingness_FINAL | Based on Mean                        | 1.849            | 2   | 153     | .161 |
|                   | Based on Median                      | 1.768            | 2   | 153     | .174 |
|                   | Based on Median and with adjusted df | 1.768            | 2   | 146.128 | .174 |
|                   | Based on trimmed mean                | 1.823            | 2   | 153     | .165 |

#### ANOVA

Willingness\_FINAL

|                | Sum of Squares | df  | Mean Square | F     | Sig. |
|----------------|----------------|-----|-------------|-------|------|
| Between Groups | 2185.580       | 2   | 1092.790    | 2.320 | .102 |
| Within Groups  | 72063.132      | 153 | 471.001     |       |      |
| Total          | 74248.711      | 155 |             |       |      |

## APPENDIX D – CONTRAST TESTS (H1)

**Contrast Coefficients**

| Contrast | Condition_Number |      |      |
|----------|------------------|------|------|
|          | 1.00             | 2.00 | 3.00 |
| 1        | -1               | 1    | 0    |
| 2        | -1               | 0    | 1    |

**Contrast Tests**

|                   |                                 | Contrast | Value of Contrast | Std. Error | t      | df      | Sig. (2-tailed) | 95% Confidence Interval |        |
|-------------------|---------------------------------|----------|-------------------|------------|--------|---------|-----------------|-------------------------|--------|
|                   |                                 |          |                   |            |        |         |                 | Lower                   | Upper  |
| Willingness_FINAL | Assumes equal variances         | 1        | -.0888            | 4.63076    | -.019  | 153     | .985            | -9.2372                 | 9.0597 |
|                   |                                 | 2        | -8.3413           | 4.05567    | -2.057 | 153     | .041            | -16.3536                | -.3289 |
|                   | Does not assume equal variances | 1        | -.0888            | 4.27465    | -.021  | 65.116  | .983            | -8.6255                 | 8.4480 |
|                   |                                 | 2        | -8.3413           | 3.97495    | -2.098 | 101.402 | .038            | -16.2261                | -.4564 |

## APPENDIX E – ANCOVA TEST (H1)

### Tests of Between-Subjects Effects

Dependent Variable: Willingness\_FINAL

| Source           | Type III Sum of Squares | df  | Mean Square | F      | Sig.  |
|------------------|-------------------------|-----|-------------|--------|-------|
| Corrected Model  | 2197.028 <sup>a</sup>   | 4   | 549.257     | 1.144  | .338  |
| Intercept        | 11871.568               | 1   | 11871.568   | 24.722 | <.001 |
| Age              | 19.701                  | 1   | 19.701      | .041   | .840  |
| Nationality      | 19.155                  | 1   | 19.155      | .040   | .842  |
| Condition_Number | 2155.107                | 2   | 1077.554    | 2.244  | .110  |
| Error            | 72030.314               | 150 | 480.202     |        |       |
| Total            | 213457.472              | 155 |             |        |       |
| Corrected Total  | 74227.342               | 154 |             |        |       |

a. R Squared = .030 (Adjusted R Squared = .004)

## APPENDIX F - PROCESS 1 TEST FOR MODERATION (H2)

### Matrix

Run MATRIX procedure:

\*\*\*\*\* PROCESS Procedure for SPSS Version 4.2 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D.      www.afhayes.com  
Documentation available in Hayes (2022). www.guilford.com/p/hayes3

\*\*\*\*\*

Model : 1  
Y : Willing  
X : Cond  
W : Gender

Sample  
Size: 74

\*\*\*\*\*

OUTCOME VARIABLE:  
Willing

| Model Summary |       |       |          |        |        |         |       |
|---------------|-------|-------|----------|--------|--------|---------|-------|
|               | R     | R-sq  | MSE      | F      | df1    | df2     | p     |
|               | .2097 | .0440 | 386.5616 | 1.0736 | 3.0000 | 70.0000 | .3660 |

| Model    |         |         |        |       |          |         |
|----------|---------|---------|--------|-------|----------|---------|
|          | coeff   | se      | t      | p     | LLCI     | ULCI    |
| constant | 30.5833 | 8.0266  | 3.8102 | .0003 | 14.5746  | 46.5920 |
| Cond     | -8.0455 | 12.3403 | -.6520 | .5166 | -32.6574 | 16.5665 |
| Gender   | 1.0243  | 4.4870  | .2283  | .8201 | -7.9248  | 9.9734  |
| Int_1    | -.0698  | 7.4347  | -.0094 | .9925 | -14.8979 | 14.7584 |

Product terms key:  
Int\_1 : Cond x Gender

| Test(s) of highest order unconditional interaction(s): |         |       |        |         |       |
|--------------------------------------------------------|---------|-------|--------|---------|-------|
|                                                        | R2-chng | F     | df1    | df2     | p     |
| X*W                                                    | .0000   | .0001 | 1.0000 | 70.0000 | .9925 |

\*\*\*\*\* ANALYSIS NOTES AND ERRORS \*\*\*\*\*

Level of confidence for all confidence intervals in output:  
95.0000

----- END MATRIX -----

## APPENDIX G - PROCESS 1 TEST FOR MODERATION WITH COVARIATES (H2)

### Matrix

Run MATRIX procedure:

\*\*\*\*\* PROCESS Procedure for SPSS Version 4.2 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D.      www.afhayes.com  
Documentation available in Hayes (2022). www.guilford.com/p/hayes3

\*\*\*\*\*

Model : 1  
Y : Willing  
X : Cond  
W : Gender

Covariates:  
Age      National

Sample  
Size: 73

\*\*\*\*\*

OUTCOME VARIABLE:  
Willing

| Model Summary |       |       |          |        |        |         |       |
|---------------|-------|-------|----------|--------|--------|---------|-------|
|               | R     | R-sq  | MSE      | F      | df1    | df2     | p     |
|               | .3079 | .0948 | 382.3554 | 1.4032 | 5.0000 | 67.0000 | .2344 |

| Model    |          |         |         |       |          |         |
|----------|----------|---------|---------|-------|----------|---------|
|          | coeff    | se      | t       | p     | LLCI     | ULCI    |
| constant | 39.4690  | 11.1711 | 3.5331  | .0007 | 17.1713  | 61.7668 |
| Cond     | -14.4477 | 12.8711 | -1.1225 | .2657 | -40.1386 | 11.2433 |
| Gender   | .6117    | 4.4699  | .1369   | .8916 | -8.3103  | 9.5338  |
| Int_1    | 4.0232   | 7.7887  | .5165   | .6072 | -11.5232 | 19.5696 |
| Age      | -.0185   | .1549   | -.1192  | .9054 | -.3277   | .2908   |
| National | -.0808   | .0422   | -1.9143 | .0598 | -.1650   | .0034   |

Product terms key:  
Int\_1 :      Cond      x      Gender

| Test(s) of highest order unconditional interaction(s): |         |       |        |         |       |
|--------------------------------------------------------|---------|-------|--------|---------|-------|
|                                                        | R2-chng | F     | df1    | df2     | p     |
| X*W                                                    | .0036   | .2668 | 1.0000 | 67.0000 | .6072 |