Radboud University Nijmegen

Bachelor Thesis

Avoid plastic consumption: The impact of different types of explanations on the perceived persuasiveness of pro-environmental ads

Student: Dang Thanh Nga

Faculty of Arts - BA International Business Communication

Supervisor: Dr. Julija Baranova

Date submission: 07/06/2021   Wordcount: 6216

Abstract

The environment globally, especially marine ecology, is suffering from the severe consequences of excessive plastic consumption. Pro-environmental advertising is one of the key strategies that have been extensively implemented to persuade the public to cease plastic usage, and how to optimize the influence of these ads should be investigated. This study tackles the potential impact of how- and why- explanations, a conventional appeal tactic on the persuasiveness of ads promoting the reduction of plastic consumption, which is assessed through the attitude towards the ad, the attitude, and intention towards the targeted behaviour. In the form of a questionnaire, an experiment was conducted with the voluntary participation of 137 respondents, who were randomly exposed to one of the three conditioned ads corresponding to the types of explanations used (why- explanation, how- explanation, and no explanation). No significant effect of the different explanation types was identified on the attitude towards the ads, the attitude and behavioural intention towards avoiding plastic consumption, and the persuasiveness of the ad. The results suggest that the persuasive impact of advertisements against plastic consumption is not influenced by the explanatory information illustrated, irrespective of the types of explanations.

Keywords: pro-environmental advertisement, persuasiveness, explanation, attitude, behavioral intention, plastic consumption.

The recent years have witnessed severe environmental consequences caused by excessive plastic consumption, which has become one of the alarming global environmental issues that require immediate measures to address. The abundance of floating plastic in the ocean has led to fish, seabirds, turtles, oysters, mussels, and many other marine animals getting ingested, evidently in the Mediterranean and coastal areas in Northern Europe (Cózar et al., 2015). There even exists a place that is highly accumulated by buoyant plastic to the degree that it is called "the Great Pacific Garbage Patch", which is the intermediary waters between California and Hawaii (GPGP) (Lebreton et al., 2018). Not only the oceans, but the landfill is also heavily affected by the overconsumption of plastic. It is reported that, in total, the amount of plastic consumed globally has far exceeded 320 million tonnes every year (Plastic Europe, 2016). Therefore, reducing plastic use has become one of the salient missions and behaviour to be promoted globally.

However, reaching the optimum efficiency of moulding this habit requires copious research and investigation efforts. Besides implementing regulations regarding plastic consumption, adversarial campaigns are also part of the strategies to gauge the citizens' attention towards the pollution caused by excessive plastic use. Marketers, so far, have made numerous attempts to promote sustainable behaviours by using different tactics in advertising. For instance, different types of advertising appeals have been applied to promote green consumption behaviour (Yang, Ly, Zhu & Su, 2015). These types of marketing appeals have been shown to have a significant impact on the audiences' green product purchase intention. Similarly, in another study by Tih, Chan, Ansary, and Ahmed (2016), evidence of the varying influences of different advertising appeals on green product purchase intention was unveiled. Furthermore, it was also indicated in prior research that not only purchase intent but consumers' attitude is also noticeably affected by environmental-conscious advertising appeals (Sarkar, Sarkar & Yadav, 2019).

Nevertheless, the limitations of the study by Yang et al. (2015) suggest that the advertising message, instead of advertising appeals, should be focused on when creating an advertisement. This message is commonly conceptualized as message appeal in communication research, which plays a determining role in the influence of a communication campaign (Hornik, Ofir, & Rachamim, 2016). However, variation in the effect sizes among the most commonly used types of appeals has been reported and illustrated through the meta-analyses conducted by Hornik et al. (2016). For instance, positively emotional messages are perceived to be more persuasive than negatively valenced ones. Another classification made between general, vague wording

(abstract appeal) and detailed, elaborative, and information-rich content (concrete appeal) demonstrated a dominating effect of concrete appeal on the consumers' response (Yang et al., 2015). Yet, according to Yang et al. (2015), this prediction was not entirely correct as to whether one appeal is more influential than the other is also dependent on the association of benefits, whether they are for the general public or the consumers themselves. This argument is supported by the findings of the study by Tih et al. (2016) since the study focuses on self-benefit and other-benefit advertisement appeals. Accordingly, the results of the comparative experiment conducted illustrated that a more substantial impact was exhibited when the environmental benefits were communicated (other-benefits) compared to self-beneficial reasons, regardless of the nationality of the audiences. To generalize, according to Schellens & De Jong (2004), persuasive documents often use arguments based on advantages and disadvantages, which is defined as pragmatic argumentation (Schellens & Verhoeven, 1994). Referring back to the definition of advertising appeal, Lin (2011) addressed it as "the direct or indirect delivery of certain benefits or incentives or the explanation why consumers should consider buying a product". In other words, these arguments are generally regarded as explanations, which have been extensively used in persuasive communication.

In contrast to the plethora of research dedicated to the consumers' purchase intention and attitudes moderated by green advertising with commercial purposes, not much attention has yet been paid to the effect of ads that purely serve the social purpose of encouraging environmentally conscious behaviours. It is vital to be aware that it is not a tangible product but a behaviour that is being promoted in this circumstance. In commercial advertisements, even though explanations (arguments used in message appeals) indicating the environmental benefits (other-benefits) might even outstrip personal benefits (self-benefits) reasoning in terms of persuasiveness (Tih et al., 2016), yet it is undeniable that if consumers comply to purchasing the environmentally-friendly products advertised, the ultimate rewards they receive are still tangible and material. Whereas in the case of the advertisements for environmental campaigns, by contrast, the reward would be neither tangible nor material, but instead the benefits for a large community, which, in this specific case, would only be able to be observed in the long run. Regarding self-reward, such psychological values as happiness, guilt alleviation, and self-image augment are the most noticeable gains from adopting pro-social behaviours, while no direct profit, even additional personal costs, is to be expected (McCarty & Shrum, 2001; Park & Ryu, 2018). Therefore, there

might be a deviation between the role of explanations in the persuasiveness of green commercial advertising and pro-environmental advertising, to which further investigation should be invested.

Given the dearth of previous research, this study focuses on tackling the role of explanation on the perceived persuasiveness of pro-environmental advertisements, which aim to promote the reduction of plastic consumption in the daily lives of the audience. Prior studies have also attempted to examine the factors determining the persuasiveness of pro-environmental ads, of which the trust-worthy message sources and especially message content are of the principal elements (Craig & MCann, 1978; Chang, Zhang & Xie, 2015). A study on the persuasiveness of pro-environmental promotion showed that when a positively framed message is added to the ad, the attitudes and the behavioural intention are enhanced significantly, giving a boost to the effectiveness of the ad (Bhatnagar & McKay-Nesbitt, 2016). Furthermore, Goldstein, Cialdini, & Griskevicius (2008) discovered that the pro-environmental ads encouraging hotel tower reuse, when incorporated the explanations indicating that the majority of others also recycle the towels (normative appeal), the persuasiveness was superior compared to when only environmental benefits explanations were provided. By utilising a similar approach, in this study, the persuasiveness will be evaluated based on the audiences' attitudes and the intention to cease plastic consumption upon exposure to the pro-environmental ads.

Theoretical background

Explanations

Wilkinson (2014) defined explanations as "communicative speech acts, and they explain in virtue of satisfying the demander's explanatory concerns in a non-illusory manner". Prior work capturing the use of explanation has indicated its application in various situations of satisfying explanatory concerns and persuasive intent. Baranova and Dingemanse (2016) have investigated the use of explanations within the social interaction context. The study found that explanations could make informationally underspecified requests more explicit by providing the missing information, making additional actions of requests, such as joking and complaining, more understandable and reasonable. Previous studies have also indicated the impact of explanations on enhancing the persuasiveness of the delivered message. For instance, in healthcare communication, the accompanying explanations to clinical treatment, if applied properly and timely, could help minimize the patients' resistance, addressing their concerns, providing

education, and tackling the struggle of physical failures or shortcomings that demotivate them (Parry, 2009). Similar functions of spoken explanations were also discovered in the advice-giving context, as they are realized to be effective for pedagogical purposes of doing education and in managing resistance among the interactants (Waring, 2007). In addition, Waring (2007) suggested that by giving explanatory reasons before giving advice, the speaker could defend themselves from possible face threats. Given such multi-functionality nature of explanations in persuasion, they could be implemented for the purpose of raising public awareness about plastic consumption. The role of explanation in reinforcing the persuasiveness of verbal messages is thus evident. However, not much attention has been paid to the role of explanations in written communication, in this case, advertisement specifically.

Explanation classification is based on the semantic nature of the explanation queries, by identifying the underlying purposes of the explanations, for instance, how, why, when, where, etc. (Wick & Slagle, 1989). In a pragmatic view of explanations, Wilkinson (2014) made a distinction between explanations that answer the question of "How" and "Why", the two commonly encountered types of explanations. Accordingly, a "How" explanation provides mechanistic explanatory information of a rather sub-personal matter, which primarily aims to describe how a certain matter would or had come about, whereas the "Why" explanation is more personal and prone to unveil the roots of a matter (Wilkinson, 2014). A study by Wang and Benbasat (2007) investigated the effect of how-, why- and trade-off explanations on the trusting beliefs of Recommendations Agents (RA) users. The trade-off explanation was used specifically for commercial purposes, as it specifies the possible constraints regarding the use of RA to provide objective guidance for the consumers. The study found that the how-explanations provided by RAs enhanced the perceived competency and benevolence of the RAs, whereas the why-explanations increased the benevolence beliefs of consumers, and trade-off explanations reinforced the perceived integrity. In comparison with classifying as implicit or explicit explanations, this way of explanation categorization suits better in the context of adversarial explanations, which were evident in the use of advertising appeals aforementioned. Furthermore, a shift in the consumers' attitude due to different types of explanations was also reported (Wang and Benbasat, 2007). In the context of pro-environmental advertising, or specifically, avoiding plastic consumption, no commercial purposes should be included in the behaviour promotional ad. Therefore, regarding the three types of explanations presented in the study by Wang and

Benbasat (2007), the trade-off explanations are not relevant, leaving the how- and why- types to the potential of the application. Referring back to the successful pro-environmental case study by Goldstein et al. (2008), the more influential appeal could be categorized as why- explanation, as it provided explanatory information that most guests (especially those who stayed in the same room as the audiences) also reuse the towels (the target behaviour), while the less effective appeal could be classified as how- explanation (merely explained that the environment could be preserved by recycling). Yet further investigation should be conducted to identify whether these types of explanations (how- and why- explanations) have an impact on the audiences' attitudes and intention to decrease their plastic consumption.

RQ: What is the effect of different types of explanations, namely why- explanation and how- explanation, on the perceived persuasiveness of pro-environmental ads promoting the reduction of plastic use?

Behavioural intention and attitudes

Pro-environmental behaviours have received increasing attention from a socio-economical perspective and as a scientific research area, evidently shown in the expansion of the research volume around this topic. According to Bamberg & Möser (2007), pro-environmental behaviour should be regarded as a combination of self-interest (i.e., following a strategy that helps prevent the harms to one's health) and of concern for the others (i.e., reducing plastic use could help protect the environment and save the lives of many marine species). Therefore, since this type of behaviour requires conscious cognitive processing, in which one has to weigh up the pros and cons of performing the behaviour, it could be regarded as reasoned behaviour (Hoeken, Hornikx & Hustinx, 2019).

In order to well-design a pro-environmental campaign that efficiently persuades the audience to limit their daily plastic consumption, the persuasiveness of the message delivered should be thoroughly evaluated (Noar, 2006). According to Hoeken et al. (2019), the common aim of persuasive communication is to influence behaviours, of which the appropriate strategy is to shift the corresponding determinants of those actions. A famous model named the integrative model of behavioural prediction, introduced by Fishbein & Yzer (2003) (see Figure 1), had combined previous models of behavioural determinants into one comprehensive version, which pointed out that a reasoned behaviour is conducted based on the specific skills, the environmental

constraints, and the intention to perform. For the analysis of the effectiveness of an ad, among the three determinants above, the behavioural intention has been predominantly emphasized in previous research (Lin, 2011; Chen, Chen & Tung, 2018; Kim & Jang, 2018). A more recent meta-analysis of psycho-social determinants that drive the pro-environmental behaviours pinpointed that behavioural intention exerts a mediating effect on the influence of all other psycho-social factors on the target behaviour (Bamberg & Möser, 2007). Therefore, assessing the intention is of paramount importance to predict the behaviour, which, according to Bamberg & Möser (2007), is accountable for 27% variance of those self-reported environmentally beneficial behaviours. Moreover, in the context of social advertising, the other two determinants, namely personal skills and environmental constraints, are primarily reliant on each case (Hoeken et al., 2019). For these reasons, this study will investigate the intention or the willingness to reduce plastic use of the audience being exposed to the pro-environmental ads.

SQ1: What is the effect of different types of explanations in pro-environmental ads promoting the reduction of plastic consumption, namely how- explanation and why- explanation, on the audiences' intention to avoid plastic use?
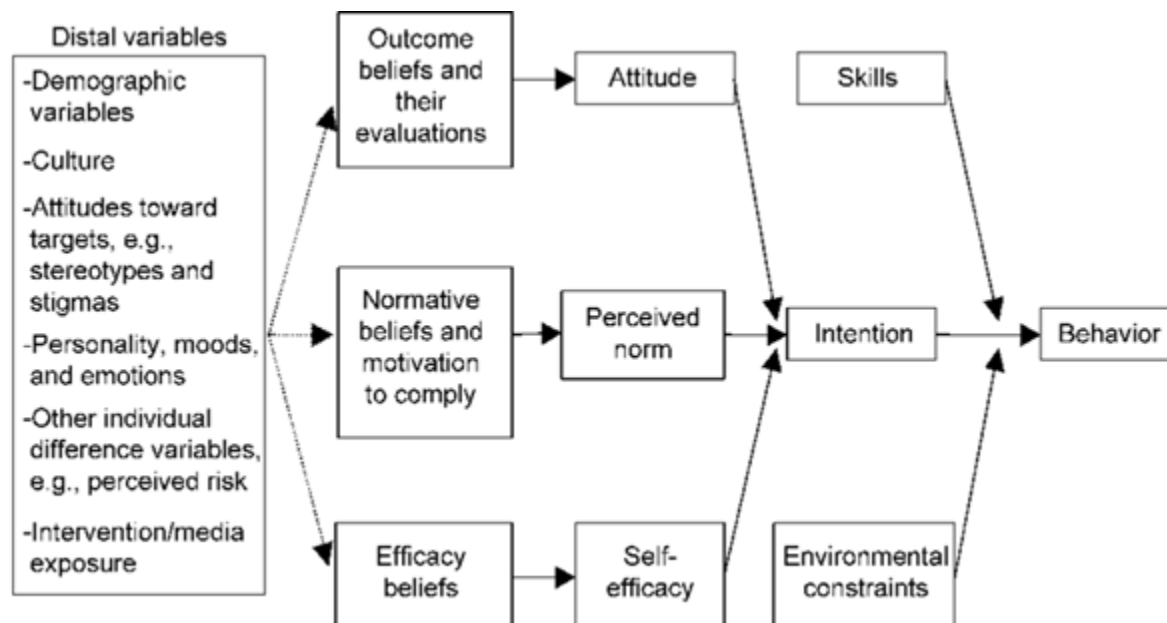

Figure 1. The integrative model of behavioural prediction (Fishbein & Yzer, 2003)

According to the integrative model of behavioural prediction by Fishbein and Yzer (2003), behavioural intention is influenced by three drivers namely attitudes, perceived norms and self-efficacy (the perceived ability to perform the action) (see Figure 1). Among these three determinants, attitude is generally considered as the most closely related and crucial to persuasiveness (Hoeken et al., 2019). Besides personal behavioural control and moral norms, it was also confirmed that attitude is a substantial predictor of pro-environmental behavioural intention in the meta-analysis by Bamberg & Möser (2007).

In commercial advertising, the effectiveness of the ads, reflected through the influence of advertising appeals on attitudes, has been broadly studied and confirmed (Lin, 2011; Sarkar et al., 2018). Ads with rational appeals, of which the messages specify the functions and the advantages of a product, are more influential on the attitudes towards purchasing a cell phone compared to ads with emotional appeals (Lin, 2011). Concerning the pro-environmental context, among adolescents, a pro-environmental attitude is found to be accountable for 22% of the variance in their actual pro-environmental behaviours (Meinhold & Malkus, 2005). Similarly, passengers' attitudes towards pro-environment travel have been identified to be the most determining driver for the intention of this sustainable behaviour, suggesting that a positive attitude towards pro-social habits is the key to promoting these behaviours (Chen, Cao, Fang, & Kang, 2019). However, not much attention has been paid specifically to the pro-environmental ads and their relation with the attitudes towards the target behaviour. Thus, this gap would be tackled in this study to assess the persuasiveness of the pro-environmental ads and their potential to shift the audiences' behaviour.

SQ2: What is the effect of different types of explanations in pro-environmental ads promoting the reduction of plastic consumption, namely how- explanation and why- explanation, on the audiences' attitude towards the target behaviour?

Moreover, in a study by Yoon and Kim (2016), it is suggested that not only the attitude towards pro-environmental behaviours but also the attitude towards the green advertisements also plays an important role in predicting behavioural intention, thus emphasizes the vital role of marketing communication and advertising. Therefore, whether or not the attitudes towards the pro-social ads with explanations and without explanations should also be investigated.

SQ3: What is the effect of different types of explanations, namely how- explanation and why- explanation, on the audiences' attitude towards the pro-environmental advertisement promoting the reduction of plastic use?

Method

An experiment was conducted in the form of a survey to examine the persuasiveness of different types of explanations used in pro-environmental ads on the attitudes and intentions of the audiences.

Materials

In the present study, explanation type was the main independent variable of which its impact on the persuasiveness of the ads would be observed. Two types of explanations were used, namely the how- and the why- types (Wang and Benbasat, 2007). According to Wang and Benbasat (2007), the how-explanation demonstrates the necessary skills, competencies, and expertise to complete certain behaviours. Meanwhile, the why-explanation indicates the underlying purposes and the expected outcome performing the targeted behaviour. These definitions were used as guidelines to which the explanations of the sample advertisements adhered.

A set of three pro-environmental advertisements against the use of plastic were created corresponding to the different types of explanations aforementioned, which included one ad without the explanation (control material), one ad with the how-explanation, and one with the why-explanation, following the definition provided by Wang and Benbasat (2007) (see Appendix A). The design of the advertisements was relatively simple to prevent any undesired external effects of visual metaphors or aestheticity, and was consistent among all versions, except for the explanation part. The intentional behaviour was stated straight-forward and explicitly as "Use less plastic" (see Appendix A), since according to Kim and Jang (2018), if the pro-environmental message is processed easily, it will enhance the perceived ability to perform the pro-environmental behaviour, thus increases the behavioural intention (see Appendix A).

Subjects

In total, the online questionnaire was completed by 137 respondents (one participant was excluded from the analysis since the completion time was too short (57 seconds) compared to the average duration). The participants were recruited using the convenience sampling method via personal connections, email, and social media. All participants must be at least 18 years old, and their English proficiency must be sufficient for them to fully comprehend the survey and be capable of completing it as English proficiency would be assessed.

In general, the average age of the respondents was approximately 25 ($M = 24.91$, $SD = 10.20$; range 18-59). With regard to gender, 65.4% of the participants were female, 34.6% were male. Most of the participants were Dutch (52.9%), 23.5% were German, 8.1% were Vietnamese and the rest were from 12 other countries. High school degree was the most recently completed educational level for 62.5% of the respondents, followed by Bachelor degree (26.5%) (educational levels ranging from High school to Doctorate degree). Among them, 35.3% evaluated their English proficiency as advanced, and 34.6% rated themselves as being proficient. Besides, according to Longhi (2013), pro-environmental behaviour varies among individuals living in different household structures. The findings of the study suggest that pro-environmental behaviours are more frequently found for individuals who live alone and couple without children than those with children, which could potentially become a modifying factor affecting the perceived persuasiveness of the ads. Therefore, data concerning their household condition was also gathered. 39.7% of the participants lived with their parents, followed by 35.3% who lived with housemates (not partner/ family members), and those living alone accounted for 11.8%.

The participants were randomly allocated to different conditions (why- explanation: 30.1%, no explanation: 31.6%, how- explanation: 38.2%). Among different conditions, background variables were also tested for equal allocation. Several chi-square tests were executed, the results of which showed no significant relation between the conditions and the distribution of gender ($\chi2$ (2) = 0.16[a], $p = .925$), nationality ($\chi2$ (38) = 35.34[a], $p = .593$), educational level ($\chi2$ (8) = 7.04[a], $p = .533$), household situation ($\chi2$ (10) = 7.43[a], $p = .684$). However, the result of a chi-square test indicated a significant relation between the levels of English proficiency and the type of explanation the respondents were allocated ($\chi2$ (10) = 19.16[a], $p = .038$), as the number of proficient participants exposed to why- explanation condition (48.8%) was much higher than those who saw the ad without explanation (23.3%). Also, two one-way ANOVAs were carried out, which showed no significant differences between the age (F

(2, 133) = 0.62, *p* = .542), and the duration of survey completion (*F* (2, 133) = 0.64, *p* = .531) among three conditions.

Design

The study was conducted following a 1 x 3 (no explanation, how- explanation, why-explanation) between-subject design with the type of explanations as the sole independent variable, consisting of three corresponding levels. The control group was exposed to the no-explanation ad.

Instrument

The participant voluntarily completed an online questionnaire (see Appendix B), in which they were presented with the conditioned pro-environmental ad that promotes cutting down on plastic consumption (see Appendix A). Then, the respondents were asked several questions related to their perception and evaluation about their attitudes towards the ad, attitudes towards the desired behaviour (avoid plastic use), and their intention to comply. The questionnaire was designed adhering to the established scales by Hoeken et al. (2019) and by Chen, Chen and Tung (2018).

The dependent variable 'attitude towards the advertisement' was evaluated based on the method introduced by Hoeken et al. (2019) with seven-point Likert scales anchored by eight semantic differentials. The semantic items (with the corresponding score) included 'bad'(1) - 'good'(7), 'unpleasant'(1) - 'pleasant'(7), 'harmful'(1) - 'useful'(7), 'boring'(1) - 'interesting'(7), 'unwise'(1) - 'wise'(7), 'ineffective'(1) - 'effective'(7), 'inconvenient'(1) - 'convenient'(7), 'unclear'(1) - 'clear'(7), which were initialized by the statement 'I think this advertisement is'. The inter-item reliability for 'attitude towards the ad' was good (α = .89).

Similarly, attitude towards decreasing plastic consumption was measured with seven-point Likert scales anchored by seven pair of differentials, including 'bad'(1) - 'good'(7), 'unpleasant'(1) - 'pleasant'(7), 'harmful'(1) - 'useful'(7), 'boring'(1) - 'interesting'(7), 'unwise'(1) - 'wise'(7), 'ineffective'(1) - 'effective'(7), 'inconvenient'(1) - 'convenient'(7), which were introduced with 'Using less plastic is' (based on Hoeken et al., 2019). The reliability for this variable, comprising of seven items, was good (α = .85).

The behavioural intention was assessed using five seven-point Likert scales anchored by 'completely disagree' (score 1) - 'completely agree' (score 7) following five statements 'I am like to buy less plastic-made products and products wrapped in plastic in the future', 'I plan to use less plastic-made products and products wrapped in plastic in the future', 'I definitely intend to buy less plastic-made products and products wrapped in plastic in the future', 'I will buy environmentally friendly products in accordance with the government advice', and 'I am willing to advise others to cut down on their plastic consumption', which were based on the model established by Chen et al. (2018). The inter-item reliability was good (α = .88).

Finally, the perceived persuasiveness was computed by calculating the sum of the mean scores of the attitude towards the ad, attitude towards the targeted behaviour, and the intention to implement the behaviour.
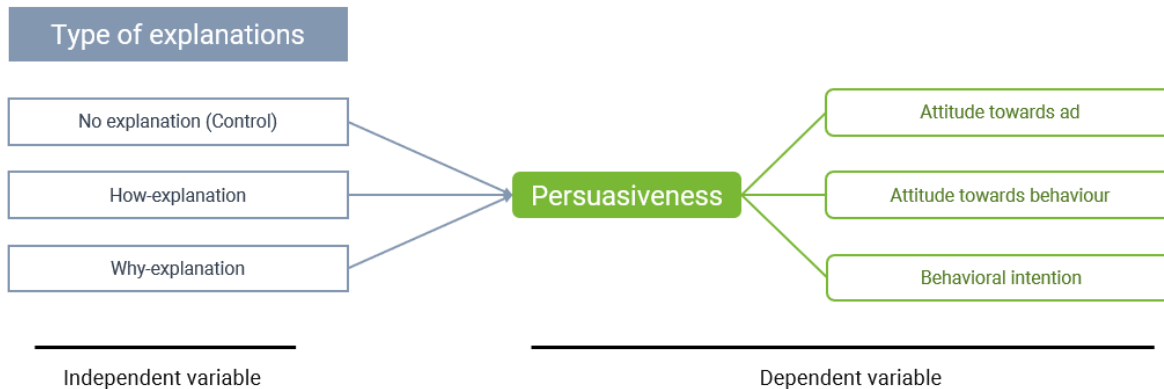
Procedure

The questionnaire for this study was administered via Qualtrics, a commonly-used online survey tool in scientific research. The participants for this study were approached via multiple channels, including social media (Facebook, Instagram, Whatsapp, Linkedin), student groups, personal networks, email, and other platforms. In order to motivate the potential respondents, it was introduced that by filling in the survey, the participants could help a group of senior-year Bachelor students to graduate. Participation was completely voluntary and could be terminated by the respondents at any moment; therefore, only fully completed responses were used for analysis. Upon approaching the potential participants, no information about the actual purpose of the study was disclosed.

In the beginning, the participants were presented with a brief introduction, informed consent, the minimum age required, and the guidelines to complete the survey. The first part of the questionnaire required the respondents to provide some relevant personal information to the analysis. Then, the ad (randomly assigned) was illustrated, and the participant would then answer the questions based on their perception and evaluation of the ad. On average, the questionnaire took every participant approximately four minutes to complete (M = 232.84, SD = 364.26 (in second)).

Statistical treatment

Several one-way ANOVA analyses were conducted to identify whether there was an impact of the use of different types of explanations in pro-environment advertisements on the persuasiveness of the ad, including attitude towards the ad, attitude towards the target behaviour, and the intention to comply respectively.

Analytical model

Type of explanations

No explanation (Control)

How-explanation

Why-explanation

Persuasiveness

Attitude towards ad

Attitude towards behaviour

Behavioral intention

Independent variable

Dependent variable

Results

The primary aim of the study was to examine whether the different types of explanations affected the perceived persuasiveness of pro-environmental ads, evaluated through the audiences' attitude towards the ad, attitude towards the target behaviour, and their intention to comply with the promotion.

A one-way analysis of variance with explanation type as the independent variable and attitude towards the ad as the dependent variable revealed no significant effect of the type of explanation displayed in the ad on the participants' attitude towards the advertisement ($F_{(2, 134)}$ = 1.86, p = .160) (see Table 1 for the means and standard deviations). Another one-way ANOVA was executed with explanation type as the independent variable and the audiences' attitude towards the target behaviour as the dependent variable. The result did not find a significant effect of the explanations used in the ads on the attitude towards discontinuing plastic consumption ($F_{(2, 134)}$ = 0.12, p = .889) (see Table 1 for the means and standard deviations). Regarding behavioural intention, another one-way ANOVA was carried out with explanation type as the

independent variable and behavioural intention as the dependent variable, of which the results revealed no statistically significant effect of the use of explanation as well as explanation types in ads on the participants' intention to avoid plastic use (F (2, 134) = 0.19, p = .824) (see Table 1 for the means and standard deviations). Finally, to examine whether the different types of explanations used exert an impact on the overall persuasiveness of the ads, a one-way ANOVA was conducted. No significant main effect of the explanations was identified on the persuasiveness of the pro-environmental ads (F (2, 134) = 0.84, p = .432). The means and standard deviations are displayed in Table 1.

Table 1. Means and standard deviations (between brackets) for the attitude towards the ad, attitude towards the target behavior, the behavioral intention and the perceived persuasiveness of the participants in function of different types of explanations used in ads (1 = very negative attitude, 7 = very positive attitude).

	Why- explanation n = 41 M (SD)	How- explanation n = 53 M (SD)	No explanation n = 43 M (SD)	Total n = 137 M (SD)
Attitude towards the ad	4.92 (1.24)	5.29 (1.02)	4.90 (1.09)	5.06 (1.12)
Attitude towards the behavior	5.92 (0.96)	6.02 (0.90)	5.99 (1.08)	5.98 (0.97)
Behavioral intention	5.33 (1.20)	5.48 (1.13)	5.42 (0.99)	5.42 (1.11)
Persuasiveness	16.18 (2.86)	16.78 (2.01)	16.31 (2.38)	16.45 (2.40)

Conclusion and Discussion

The present study has attempted to identify if there is an impact of different types of explanations (how- explanation and why- explanation) on the persuasiveness of the pro-environmental ad that promotes decreasing plastic consumption, observed and evaluated through the audiences' attitude towards the ad, attitude towards avoiding plastic use, and their intention to comply with the target behaviour.

The findings revealed that incorporating either how- and why- explanations into the reducing plastic use promotional advertisement did not affect the attitude towards the advertisement, attitude towards the environmentally-friendly behaviour that the ad promoted, and the intention to implement this behaviour. In general, the perceived persuasiveness was not affected by adopting the explanatory information into the pro-environmental ads. Regardless of the type of explanation that the participants were exposed to (how- explanation and why- explanation), the audiences' attitude towards the ads, the attitude, and intention towards ceasing plastic consumption were relatively high. Thus, the results suggested that in the audiences' perception, the pro-environmental ads are regarded as equally persuasive irrespective of the explanations used, or without explanation.

The findings of the present study are not in line with what has been previously found by Goldstein et al. (2008), which capture the similar context of pro-environmental advertisement that promotes environmentally beneficial behaviour. The persuasiveness of the ad with why-explanation indicating the descriptive norms that other hotel guests, especially those who had stayed in the same room mostly recycled their used towels, outstripped the original explanation (how- explanation) (Goldstein et al., 2008), which differs from the equally persuasive effect between the ads with the two corresponding types of explanations in this study. The integrative model of behavioural prediction by Fishbein & Yzer (2003) (see Figure 1) could be used to suggest a potential explanation for this, as the why- explanation used in the study by Goldstein et al. (2008) tackled the perceived norm, one of the three primary attributes of the behavioural intention. On the other hand, the traditional explanation used (how- explanation) was relatively simple without any special tactics but to help protect the environment (Goldstein et al., 2008). In this study, according to the integrative model of behavioural prediction (Fishbein & Yzer, 2003), both the attitude and the intention towards avoiding plastic consumption were high, irrespective

of the types of explanation used. It could be the case that, while the why- explanation addressed the evaluation of the outcome, which is the key driver of the attitude (see Figure 1), the how-explanation tackled the perceived self-efficacy by providing suggestions that facilitate one's performance of the behaviour, which is also one of the controlling determinants of intention (see Figure 1). However, a more specific investigation into the particular effect of each explanation should be conducted to account for this assumption in future research. In addition, it was also proposed by Goldstein et al. (2008) that the encouraged behaviour and the observed norm were highly relevant to the audiences in terms of the specific setting, which could have allowed for immediate implementation and thus a high level of persuasiveness was obtained. On the other side, reducing plastic consumption is a more general behaviour that could be performed in various circumstances. Hence, it is inferred that depending on the specific behaviour promoted, the effectiveness of the explanations used in pro-environmental might differ, which could also be examined at a more in-depth level in later studies.

The findings of the current study are also incongruent with the previous conclusions drawn by Wang and Benbasat (2007), which demonstrates concrete evidence of the effect of how- and why- explanations in improving the attitude towards the Recommendation Agents (RA) promoted. Furthermore, how- explanation was found to be more effective than why- explanation in terms of reinforcing the perceived competence and the audiences' benevolence beliefs of the RA, thus the persuasiveness of the RA is enhanced. This incongruence could be explained by the difference between the context of the two studies. The RA in the study by Wang and Benbasat (2007) is an information technology service of which the algorithms are not fully understood by its users (the audience). Thus, the how- explanation successfully promoted the usage by providing information that addressed the knowledge gap, which satisfied the most desirable need of the audience. The why- explanation in the study, on the other hand, managed to influence the attitude towards RA by tackling the suspicion of the users that the RA might not prioritize their information need and might bias the purpose of the RA provider (Wang & Benbasat, 2007). Whereas in the current study, ceasing plastic consumption is the behaviour to be promoted. Since this environmentally-friendly behaviour has been encouraged at a global scale (Chirico et al., 2021; Cózar et al., 2015), the underlying goal of the behaviour might have already been acknowledged by the audiences, which might affect the role of why- explanation in the ad. In addition, decreasing plastic use is in fact not a too challenging behaviour that requires specific

techniques or know-how to perform. Thus, the how- explanation (see Appendix A), in an attempt to suggest the possible ways to minimize plastic consumption, may not achieve its goal if the audiences have already been aware of these solutions. Therefore, this mismatch between the results of the two studies exemplifies how explanations work differently in different contexts (specifically between pro-environmental and commercial contexts), even when the types of explanations remain similar.

Similarly, concerning the studies about advertisements promoting green consumerism, discrepancies between the findings of those studies and the present study are also detected. A pronounced impact of the product attributes explanations used in the message appeal was found on the attitude towards environmentally friendly brands and the purchase intention of high-tech products (Sarkar et al., 2019). Similar effects of the explanations of message appeals were also identified in enhancing the consumers' green consumption intention (Yang et al., 2015). However, since the promoted target in these studies is not a behaviour, only the attributes and benefits of the products were explained. Thus, these explanations could only be classified as why-explanations (stating why the customers should buy the products). Since no matter whether an explanation is used or not in our pro-environmental advertisements, the attitude or behavioural intention are comparable, it could also be the case that encouraging an environmentally-friendly behaviour like discontinuing plastic use is more challenging than promoting the use of a product or service like RA. Unlike purchasing a product, trying a RA, or recycling hotel towels, ceasing the use of plastic is not a single-effort behaviour. In fact, it includes multiple actions that more or less resembles a habit, which requires various repetitions during a certain period of time and therefore might be more challenging to maintain (Lally & Gardner, 2011). Nevertheless, further research is needed to examine this prediction.

Limitations and suggestions for future research

There are several limitations in the present study that should be improved and refined in future research. Firstly, the pre-existing motivation to adopt the promoted behaviour was not taken into consideration. In case the participants had already been highly motivated to reduce their plastic consumption, this could have interfered with the persuasive effect of the explanations used. For future studies, a preliminary check on the motivation and intention to implement the target behaviour should be conducted. Those participants with moderate to high motivation

should be either be excluded from analyses or should be categorized and analyzed separately corresponding to their motivation levels. Thus, findings of the persuasive impact of different types of explanations used in pro-environmental ads on people with varying levels of motivations could possibly be drawn. Secondly, participants' prior knowledge regarding the arguments presented as explanations in the advertisement samples was not controlled. According to Wood (1982), when evaluating an argument, the readers with a thorough prior understanding of the information demonstrated are less inclined to be convinced than those who have little to no pre-existing knowledge. If the facts displayed on the ads were familiar to some participants, no new information was generated, and this knowledge discrepancy between the people surveyed could more or less influence the outcome of the study. Therefore, the familiarity with the information presented in advertisements should be carefully managed in later research. Another limitation lies in the difference between the levels of English proficiency across conditions, as English was the second language to most of the participants. De Langhe et al. (2011) revealed that the participants are prone to deliver more emotionally intense responses on rating scales in their non-native language. Therefore, future studies are recommended to adapt the questionnaire and the ads to the native languages of the respondents to ensure that their evaluations are not affected by their emotional intensity. However, given the small scale of the current study, we only establish the threshold that every participant was capable of comprehending the survey and the ads illustrated.

Relevance and practical implications

Despite the profuse research volume dedicated to the varying range of message appeals used in advertising, most of them focused on promoting a commercial product or service, leaving the tactics of encouraging such pro-environmental behaviour like decreasing plastic use under-investigated. This study contributes an additional insight that even though the impact of different types of explanations on the attitude and purchase intention towards several products and services being promoted was reported, the attitude and intention towards reducing plastic consumption are not affected by the inclusion of how- and why- explanations in pro-environmental advertisements.

For practical implications, environmentalists, the governments, organizations, or any interested subjects who intend to execute advertising strategies to foster decreasing plastic usage should not rely on how- and why- explanations to yield a considerable attitude or intention

enhancement from pro-environmental ads. Nevertheless, these types of explanations could still be included in the pro-environmental ads as supporting information as no negative influence was found on the advertisement or the predicting determinants of the target behaviour either.

References

Cózar A, Sanz-Martín M, Martí E, González-Gordillo JI, Ubeda, B., Gálvez JÁ, … Duarte, C. M. (2015). Plastic accumulation in the mediterranean sea. *Plos One*, *10*(4), 0121762. https://doi-org.ru.idm.oclc.org/10.1371/journal.pone.0121762

Lebreton, L., Slat, B., Ferrari, F., Sainte-Rose, B., Aitken, J., Marthouse, R., Hajbane, S., Cunsolo, S., Schwarz, A., Levivier, A., Noble, K., Debeljak, P., Maral, H., Schoeneich-Argent, R., Brambini, R., & Reisser, J. (2018). Evidence that the Great Pacific Garbage Patch is rapidly accumulating plastic. *Scientific Reports*, *8*(1), 4666–15. https://doi.org/10.1038/s41598-018-22939-w

Plastics Europe. Plastics - the facts 2016: an analysis of European plastics production, demand and waste data. Preprint at http://www.plasticseurope.org (2016)

Yang, D., Lu, Y., Zhu, W., & Su, C. (2015). Going green: How different advertising appeals impact green consumption behavior. *Journal of Business Research, 68*(12), 2663–2675. https://doi.org/10.1016/j.jbusres.2015.04.004

Tih, S., Chan, K.-T., Ansary, A., & Ahmed, A. (2016). Green Advertising Appeal and Consumer Purchase Intention. *Jurnal Pengurusan*, *47*(1), 157–168. https://doi.org/10.17576/pengurusan-2016-47-13

Sarkar, J. G., Sarkar, A., & Yadav, R. (2019). Brand it green: young consumers' brand attitudes and purchase intentions toward green brand advertising appeals. *Young Consumers*, *20*(3), 190–207. https://doi.org/10.1108/YC-08-2018-0840

Hornik, J., Ofir, C., & Rachamim, M. (2016). Quantitative evaluation of persuasive appeals using comparative meta-analysis. *The Communication Review (Yverdon, Switzerland), 19*(3), 192–222. https://doi.org/10.1080/10714421.2016.1195204

Schellens, P. ., & Jong, M. D. de. (2004). Argumentation schemes in persuasive brochures.
    Argumentation, *18*(3), 295–323. https://doi.org/10.1023/B:ARGU.0000046707.68172.35

Schellens, P. J., & Verhoeven, G. (1994). *Argument en tegenargument* (2e editie). Groningen:
    Martinus Nijhoff.

Lin, L. Y. (2011). The impact of advertising appeals and advertising spokespersons on
    advertising attitudes and purchase intentions. *African Journal of Business Management,*
    5(21), 8446-8457.

McCarty, J. A., & Shrum, L. . (2001). The Influence of Individualism, Collectivism, and Locus of
    Control on Environmental Beliefs and Behavior. *Journal of Public Policy & Marketing*,
    20(1), 93–104. https://doi.org/10.1509/jppm.20.1.93.17291

Park, K., & Ryu, G. (2018). The Effect of Regulatory Focus on Individuals' Donation Behavior.
    Sustainability (Basel, Switzerland), *10*(3), 760–. https://doi.org/10.3390/su10030760

Craig, C. S., & McCann, J. M. (1978). Assessing Communication Effects on Energy
    Conservation. *The Journal of Consumer Research*, *5*(2), 82–88.
    https://doi.org/10.1086/208718

Chang, H., Zhang, L., & Xie, G.-X. (2015). Message framing in green advertising: the effect of
    construal level and consumer environmental concern. *International Journal of*
    Advertising, *34*(1), 158–176. https://doi.org/10.1080/02650487.2014.994731

Bhatnagar, N., & McKay-Nesbitt, J. (2016). Pro-environment advertising messages: the role of
    regulatory focus. *International Journal of Advertising*, *35*(1), 4–22.
    https://doi.org/10.1080/02650487.2015.1101225

Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A Room with a Viewpoint: Using
    Social Norms to Motivate Environmental Conservation in Hotels. *The Journal of*
    Consumer Research, 35(3), 472–482. https://doi.org/10.1086/586910

Wilkinson, S. (2014). Levels and kinds of explanation: lessons from neuropsychiatry. *Frontiers*
    in Psychology, *5*, 373–373. https://doi.org/10.3389/fpsyg.2014.00373

Baranova, J., & Dingemanse, M. (2016). Reasons for requests. *Discourse Studies*, *18*(6), 641–675. https://doi.org/10.1177/1461445616667154

Parry, R. (2009). Practitioners' accounts for treatment actions and recommendations in physiotherapy: when do they occur, how are they structured, what do they do? *Sociology of Health & Illness*, *31*(6), 835–853. https://doi.org/10.1111/j.1467-9566.2009.01187.x

Waring, H. Z. (2007). The multi-functionality of accounts in advice giving. *Journal of Sociolinguistics*, *11*(3), 367–391. https://doi.org/10.1111/j.1467-9841.2007.00328.x

Wick, M. ., & Slagle, J. . (1989). An explanation facility for today's expert systems. *IEEE Expert*, *4*(1), 26–36. https://doi.org/10.1109/64.21897

Wang, W., & Benbasat, I. (2007). Recommendation Agents for Electronic Commerce: Effects of Explanation Facilities on Trusting Beliefs. *Journal of Management Information Systems*, *23*(4), 217–246. https://doi.org/10.2753/MIS0742-1222230410

Bamberg, S., & Möser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: a new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology*, *27*(1), 14–25. https://doi-org.ru.idm.oclc.org/10.1016/j.jenvp.2006.12.002

Hoeken, H., Hornikx, J., & Hustinx, L. (2019). *Persuasive texts: Research and design*. Nijmegen: Radboud University Nijmegen.

Noar, S. M. (2006). A 10-Year Retrospective of Research in Health Mass Media Campaigns: Where Do We Go From Here? *Journal of Health Communication*, *11*(1), 21–42. https://doi.org/10.1080/10810730500461059

Fishbein, M., & Yzer, M. C. (2003). Using theory to design effective health behavior interventions. *Communication theory*, *13*(2), 164-183.

Chen, C. C., Chen, C. W., & Tung, Y. C. (2018). Exploring the Consumer Behavior of Intention to Purchase Green Products in Belt and Road Countries: An Empirical Analysis. *Sustainability (Basel, Switzerland)*, *10*(3), 854–. https://doi.org/10.3390/su10030854

Kim, H., & Jang, J. (2018). The Easier the Better: How Processing Fluency Influences Self-
    Efficacy and Behavioral Intention in Pro-Social Campaign Advertising. *Sustainability*,
    10(12), 4777. doi:10.3390/su10124777

Meinhold, J. L., & Malkus, A. J. (2005). Adolescent Environmental Behaviors: Can Knowledge,
    Attitudes, and Self-Efficacy Make a Difference? *Environment and Behavior*, *37*(4), 511–
    532. https://doi.org/10.1177/0013916504269665

Chen, W., Cao, C., Fang, X., & Kang, Z. (2019). Expanding the Theory of Planned Behaviour to
    Reveal Urban Residents' Pro-Environment Travel Behaviour. *Atmosphere*, *10*(8), 467–.
    https://doi.org/10.3390/atmos10080467

Yoon, H. J., & Kim, Y. J. (2016). Understanding Green Advertising Attitude and Behavioral
    Intention: An Application of the Health Belief Model. *Journal of Promotion
    Management*, *22*(1), 49–70. https://doi.org/10.1080/10496491.2015.1107006

Longhi, S. (2013). *Individual pro-environmental behaviour in the household context* (No. 2013-
    21). ISER Working Paper Series.

Lally, P., & Gardner, B. (2013). Promoting habit formation. *Health Psychology Review, 7*(sup1),
    S137–S158. https://doi.org/10.1080/17437199.2011.603640

Wood, W. (1982). Retrieval of attitude-relevant information from memory: Effects on
    susceptibility to persuasion and on intrinsic motivation. *Journal of Personality and Social
    Psychology*, *42*(5), 798–810. https://doi.org/10.1037//0022-3514.42.5.798

De Langhe, B., Puntoni, S., Fernandes, D., & Van Osselaer, S. M. J. (2011). The Anchor
    Contraction Effect in International Marketing Research. *Journal of Marketing Research*,
    48(2), 366–380. https://doi.org/10.1509/jmkr.48.2.366

Appendix

Appendix A. Advertisement samples

Set 1:

1. No-explanation ad

2.   How-explanation ad

3.   Why-explanation ad

Appendix B. Questionnaire for the survey

Thank you very much for your participation in this study! We are a group of International Business Communication students at Radboud University, and this survey is conducted as part of our Bachelor Thesis research. In this study, you will need to complete a questionnaire, which aims to gather insights towards pro-environmental advertisements. There are no right or wrong answers. All the responses will only be used for scientific research and will be treated anonymously. The questionnaire will take approximately 3-5 minutes to complete.

Should you have any concerns or complaints regarding the survey, please send an e-mail to camiel.hendriks@student.ru.nl.

Your participation in this study is voluntary. Participants have the right to stop the questionnaire at any point. Please confirm that you have been sufficiently informed and give consent to continue with the study by choosing the appropriate option below:

I read the information above and I agree to take part in this experiment

○ I agree

○ I disagree

I declare that I am 18 or older

○ Yes

○ No

PART 1. Personal information

1. My gender is:

○ Male

○ Female

○ Other

2. How old are you?

3. What is your nationality?

4. The highest degree of education I have completed is:

○ No schooling completed

○ Elementary school

○ High school degree

○ Trade/ technical/ vocational degree

○ Bachelor degree

○ Master degree

○ Doctorate degree

5. What is your living condition?

○ I live alone

○ I live with a partner

○ I live with a partner and children

○ I live with children without a partner

○ I live with my parents

○ I live with other housemates (not applicable to any options above)

○ Others

6.   What is your level of English proficiency?

○ Beginner

○ Elementary

○ Intermediate

○ Upper-intermediate

○ Advanced

○ Proficient

PART 2. Please observe the advertisement carefully and fill in the following questions.
[RANDOMIZED ADVERTISEMENT FROM APPENDIX A]

1. I think the advertisement is:

Bad	○	○	○	○	○	○	○	Good
Unpleasant	○	○	○	○	○	○	○	Pleasant
Harmful	○	○	○	○	○	○	○	Useful
Boring	○	○	○	○	○	○	○	Interesting
Unwise	○	○	○	○	○	○	○	Wise

Ineffective   O   O   O   O   O   O   O   Effective

Inconvenient O   O   O   O   O   O   O   Convenient

Unclear   O   O   O   O   O   O   O   Clear

2.   Using less plastic is:

        Bad   O   O   O   O   O   O   O   Good

Unpleasant   O   O   O   O   O   O   O   Pleasant

Harmful   O   O   O   O   O   O   O   Useful

Boring   O   O   O   O   O   O   O   Interesting

Unwise   O   O   O   O   O   O   O   Wise

Ineffective O   O   O   O   O   O   O   Effective

Inconvenient O   O   O   O   O   O   O   Convenient

3.   I am likely to buy less plastic-made products and products wrapped in plastic in the future

Completely disagree   O   O   O   O   O   O   O   Completely agree

4.   I plan to use less plastic-made products and products wrapped in plastic in the future

Completely disagree   O   O   O   O   O   O   O   Completely agree

5.   I definitely intend to buy less plastic-made products and products wrapped in plastic in the future

Completely disagree   O   O   O   O   O   O   O   Completely agree

6.   I will buy environmentally friendly products in accordance with the government's advice

Completely disagree   ○   ○   ○   ○   ○   ○   ○   Completely agree

7.   I am willing to advise others to cut down on their plastic consumption

Completely disagree   ○   ○   ○   ○   ○   ○   ○   Completely agree